GEOGRAPHY,
RESOURCES & INDUSTRIES

October, 1945

EDISON ELECTRIC INSTITUTE BULLETIN

NOV 1945

Committees of the Institute Prepare for Increased Peace-Time Activities 277

The Path Ahead . . . . . C. W. KELLOGG 285

Opportunities in the Electrical Industry 289

The Job Ahead for the Transmission & Distribution Committee . . . . . L. R. GATY 295

Operating Experience With an Expulsion Tube Equipped 33 Kv-Wood Pole Line . . . . . M. H. PRATT 297

Progress Report on Aerial Cable . . . . . E. V. SAYLES 299

Recommended Practice of Home Lighting 300

Annual Meeting of Pennsylvania Electric Association . . . 301

Northwest Association Meeting 302

Indiana Association Meets at French Lick 302

Personals 304

EEI Publications and Service Material 306

Conventions and Meetings 308

PUBLISHED MONTHLY BY EDISON ELECTRIC INSTITUTE

THE ELECTRIC LIGHT AND POWER INDUSTRY

Current Statistical Data Covering 100 Per Cent of Industry

July, 1944 and 1945

SOURCE AND DISPOSAL OF ENERGY—MONTH OF JULY

	1945	1944	%
GENERATION* (Net)			
By Fuel Burning Plants	12,251,155,000	12,812,581,000	− 4.4
By Water Power Plants	6,701,038,000	5,979,641,000	+12.1
Total Generation	**18,952,193,000**	**18,792,222,000**	**+ 0.9**
Add—Net Imports Over International Boundaries	178,626,000	149,504,000	+19.5
Less—Company Use	116,619,000	130,732,000	−10.8
Less—Energy Used by Producer	239,400,000	249,389,000	− 4.0
Net Energy for Distribution	18,774,800,000	18,561,605,000	+ 1.1
Losses and Unaccounted for	2,507,606,000	2,495,913,000	+ 0.5
Sales to Ultimate Customers	**16,267,194,000**	**16,065,692,000**	**+ 1.3**

CLASSIFICATION OF SALES

NUMBER OF CUSTOMERS—As of July 31st			
Residential or Domestic	27,852,179	27,225,038	+ 2.3
Rural (Distinct Rural Rates)	1,194,027	1,143,518	.....
Commercial or Industrial:			
Small Light and Power	4,292,819	4,212,277	+ 2.5
Large Light and Power	178,562	150,136	
Other Customers	116,655	116,197	+ 0.4
Total Ultimate Customers	**33,634,242**	**32,847,166**	**+ 2.4**
KILOWATTHOUR SALES—During Month of July			
Residential or Domestic	2,602,947,000	2,403,012,000	+ 8.3
Rural (Distinct Rural Rates)	374,992,000	304,137,000	+23.3
Commercial or Industrial:			
Small Light and Power	2,438,621,000	2,474,164,000	− 1.4
Large Light and Power	9,456,219,000	9,534,808,000	− 0.8
Street and Highway Lighting	149 247,000	149,462,000	− 0.1
Other Public Authorities	639,836,000	595,049,000	+ 7.5
Railways and Railroads:			
Street and Interurban Railways	343,919,000	352,201,000	− 2.4
Electrified Steam Railroads	216,559,000	213,826,000	+ 1.3
Interdepartmental	44,854,000	39,033,000	+14.9
Total to Ultimate Customers	**16,267,194,000**	**16,065,692,000**	**+ 1.3**
Revenue from Ultimate Customers	**$274,310,900**	**$265,778,400**	**+ 3.2**

RESIDENTIAL OR DOMESTIC SERVICE

AVERAGE CUSTOMER DATA—For 12 months ended July 31st			
Kilowatthours per Customer	1,191	1,122	+ 6.1
Average Annual Bill	$41.33	$39.83	+ 3.8
Revenue per Kilowatthour	3.47¢	3.55¢	− 2.3

(*) By courtesy of the Federal Power Commission.

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EDISON ELECTRIC INSTITUTE BULLETIN

Volume 13 OCTOBER 1945 No. 10

Committees of the Institute Prepare for Increased Peace-Time Activities

COMMITTEE work, forming as it does the backbone of trade association activities, got under way this Fall confronted by the many difficult tasks of reconversion to peacetime living as well as the perennial problems of the industry. While it is a truism that electric light and power companies do not have reconversion problems of their own, they nevertheless participate in the reconversion problems of all of the industries they serve.

Problems created by transportation, new markets, better and less expensive products, and the relationships of management and its employees, since they have an affect on the kilowatthours of electricity manufactured and distributed by the power companies, are of necessity a vital concern to the men at the helms of these companies.

During the war it was the production engineer who held the spotlight, since it was his all-important assignment to see that the power plants transmitted more electricity than ever before. At the same time, accountants and sales managers, the men who deal with industrial relations, with the prevention of accidents, with relations with customers, were busy making plans for peacetime operation. Most of these plans and surveys have been reproduced and placed in the hands of the Edison Electric Institute membership.

Now these programs must be enlarged upon and put into action. Edison Electric Institute committees, through their functions in the months ahead will show the way to better illuminated communities, will help make industrial processes more efficient, and will create more efficient methods in departments of the electric light and power companies themselves.

Although troop trains continue to move across the country, and there are more uniformed men than civilians on airliners, nonetheless the wartime restrictions on meetings have been lifted—in other words, conventions can be held if a place can be found to hold them. Within the next few months, observers say, meeting places and travel facilities will have improved to such an extent that committee work can be carried on with more ease.

More than forty men serve as chairmen of the various EEI divisions, committees and subcommittees. (The names of most of these men were given in the EEI BULLETIN for September.) The four divisions into which the committees are grouped consist of Accounting, Commercial, Engineering, and General, this last handling such phases of the industry's work as membership, rate research and accident prevention.

The General Committees

The General Committees, like some of the Engineering Committees, have continuing functions, since they are dealing with matters of perennial interest to the electric light and power industry. All of the General Committees report directly to the Board of Directors of the Institute.

The titles of these committees make their functions fairly obvious. Nevertheless, a few words on the scope of their activities would seem to be in order.

The Accident Prevention Committee has as its scope the prevention of accidents in the electric light and power industry. Headed by D. C. Stewart, of the Niagara Hudson Power Corp., the committee not only circulates to the membership information on accidents but formulates or reports on new procedures to prevent accidents. The committee studies every aspect of employee health. It uses not only the printed word but films, slides and lectures to cut down accidents.

The Committee on Industrial Relations, whose chairman is H. K. Breckenridge, of the West Penn Power Co., studies wages, hours, benefits and pensions within the industry and arranges for a frequent exchange of information on employment practices. Any member of the Institute faced with a problem in employee relations thus has at his command information as to how other power companies have solved a similar problem.

The Insurance Committee, with J. H. Nickell, of the Philadelphia Electric Co., as Chairman, keeps informed on rates and forms of coverage for various kinds of insurance and assists member companies on problems in the field. Incidentally work of this committee has directly resulted in the savings of millions of dollars annually to the electric industry through lowered insurance rates; the Rate Research Committee, with F. A. Newton as chairman, supervises the publication of the Edison Electric Rate Book and reports on new rate methods; the Statistical Committee, with W. N. Lewis, of Ebasco Services, Inc., as Chairman, reports on statistical methods and forms or compiles statistical information for the industry. Two committees made up from among the Board of Directors are the Codes and Rates group headed by H. B. Bryans, of the Philadelphia Electric Co., and the Membership Committee headed by J. F. Fogarty, of the North American Co.

CHAIRMEN OF THE GENERAL COMMITTEES

H. K. BRECKENRIDGE
Chairman, Committee on Industrial Relations

J. F. FOGARTY
Chairman, Membership Committee

H. B. BRYANS
Chairman, Codes and Standards Committee

W. N. LEWIS
Chairman, Statistical Committee

F. A. NEWTON
Chairman, Rate Research Committee

J. H. NJCKELL
Chairman, Insurance Committee

The Accounting Division

The accountants of EEI, now under the leadership of Harold H. Scaff, Ebasco Services, Inc., Chairman of the Accounting Division General Committee, carried on last year under difficult conditions and accomplished some highly creditable results in the form of reports, surveys and papers. And the work was done despite a shortage of office personnel, due the needs of the armed forces and war factories. The committees were also fettered by the restrictions on travel.

Because the problems of the electric light and power industries in the accountancy division are for the most part identical with those of accountants in the gas industry, nearly all of the work is a joint effort, in which it would be idle to attempt to apportion credit, even though the two industries bear the somewhat embarrassing dual relationship of competitors as well as sisters. Joint conferences of accountants of the electric light and gas industries, which have played so important a part in the life of the accounting divisions during seven administrative years preceding 1944-1945, will be resumed as soon as schedules can be worked out.

Two specialized committees have prospects of important tasks before them. One, the recently established committee on Application of Accounting Principles, will act as a clearing house for the industry on the effect authoritative pronouncements on fundamental accounting principles may have when applied to the special conditions of electric light and power enterprises subject to strict governmental regulation. Although not organized until late in the spring of 1945, this committee, under the chairmanship of R. P. Kaesshaefer, American Water Works and Electric Company, Inc., has already made its voice heard and been welcomed by such organizations as the accounting staff of the Securities and Exchange Commission, the American Institute of Accountants, and the Controller's Institute.

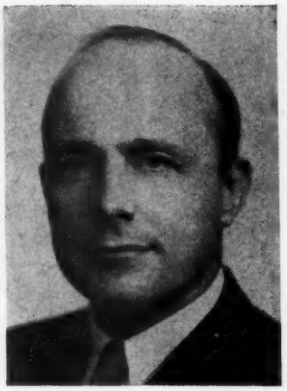
The other specialized committee referred to in the foregoing is that on Depreciation Accounting, whose chairman is A. W. Hastings of Epsco, Inc. This group is visualized as in some sense a stand-by committee, now that the report of the Committe on Depreciation of the National Association of Railroad and Utilities Commissioners, the principal object of the industry committee's concern for five years, has been completed and presented to the Association. The committee, however, besides acting as an

CHAIRMEN OF THE ACCOUNTING DIVISION COMMITTEES

H. H. SCAFF
Chairman, Accounting Division General Committee

R. P. KAESSHAEFER
Chairman, Committee on Application of Accounting Principles

F. W. PHELPS
Chairman, Customer Activities Committee



A. W. HASTINGS
Chairman, Depreciation Accounting Committee

industry reference on depreciation accounting problems, hopes to begin some constructive research, the results of which may help to give the answer to the still controversial question of how depreciation should be dealt with in the accounts of regulated public utilities.

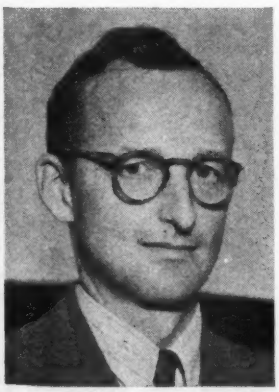
The General Accounting Committee, whose chairman is W. C. Young of the Public Service Electric and Gas Company, will as usual have a wide field for study and report. It is too early to say what special studies will be agreed upon as most important during the coming year, but an active year with concrete results is clearly forecast.

The Plant Accounting and Records Committee, whose chairman is A. L. Davies of the West Penn Power Company, shows the course it will take from the trend of discussion at its meeting with the corresponding committee of the American Gas Association in June. It will probably devote most of its efforts to testing and promuglating ways and means to simplify and reduce the cost of the voluminous records now maintained for plant and equipment under regulatory commission requirements.

The Customer Activities Committee, whose chairman is F. W. Phelps, of the Union Electric Company of Missouri, will have as always a field for its efforts so wide that its chief difficulty will be to select the most promising subjects on which to concentrate. The intricate procedures and practices involved in the maintenance of accounts with customers, their correlation with customer attitudes and the necessity for maintaining customer good will together with the use and abuse of credit, are questions which in spite of good work done in the past are by no means satisfactorily answered, and still require the exchange of experience followed from time to time by reports as definite results develop from surveys or as opinion crystalizes on specific recommendations.

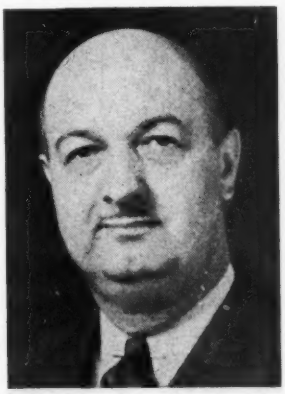
The Materials and Supplies Committee, in point of concrete results one of the most active and productive committees of 1944-1945, is already organizing its work for the coming year, under its chairman, R. S. King, of the Union Electric Company of Missouri, to deal with the numerous and important questions connected with the maintenance and operation of stores and the handling of material into and out of stock. By no means do all of these questions directly affect the accounting process, but since their reflection in the accounts is the final test of successful stores procedures, it has seemed appropriate to retain the Materials and Supplies Committee in the Accounting Division.

The Taxation Committee, whose



W. C. YOUNG
Chairman, General Accounting Committee

R. S. KING
Chairman, Materials & Supplies Committee



A. L. DAVIES
Chairman, Plant Accounting & Records Committee

W. S. ALT
Chairman, Taxation Committee

CHAIRMEN OF THE COMMERCIAL DIVISION COMMITTEES AND SECTIONS

R. F. HARTENSTEIN
Chairman, Wiring Committee

G. W. OUSLER
Chairman, Commercial Division General Committee

D. M. DEBARD
Chairman, Sales Training Committee

chairman is W. S. Alt, Union Electric Company of Missouri, is evidently in for a busy year, even if its chief headache during recent months, the Excess Profits Tax, is abolished or materially reduced, as now seems probable. To keep up with the Internal Revenue Bureau rulings and court proceedings on income and profits taxes, to say nothing of the problems involved in state and local taxation, and to exchange information on them as they affect electric light and power interests, will be a highly important job until the millennium arrives when our taxes will be simple, readily determinable and equitable.

A special joint committee on Customers' Activities and Procedures, including in its membership accountants of both the EEI and AGA, has been working for some time under the chairmanship of L. A. Mayo, of The Connecticut Light and Power Company, to determine whether some fundamental simplifications and improvements of customer accounting procedures and customer relations cannot be developed to achieve better administrative controls and reduce costs. The committee has accumulated a vast amount of material which it is in the process of analyzing. During the year it hopes to be able to make some concrete recommendations.

The Commercial Division

The Commercial Division, which has as one of its paramount tasks the training of sales personnel to stimulate postwar merchandising of electric light and power services has already set forth numbers of its objectives, including an extensive sales training program for the electrical industry. (EEI BULLETINS for July and August of this year detail the steps being taken to create job opportunities and to stimulate postwar sales.)

On November 27 and 28, when the Commercial Division General Committee holds a "full-dress" session at the Biltmore Hotel in New York, goals will be further defined. This over-all committee of the Commercial Division has as its chairman George W. Ousler of the Duquesne Light Company of Pittsburgh. This November meeting is expected to point the way to increased sales in many phases of the electric light and power industry's economy. The six sections of the report of the Commercial Planning Committee already distributed, included a fund of informative data for load building effort.

The lifting of travel restrictions and of limitations on the size of meetings is a particular boon to the numerous com-

P. M. ALDEN
Chairman, Commercial Sales Section

CHARLES SNYDER
Chairman, Industrial Power & Heating Section

H. RESTOFSKI
Chairman, Residential Section

C. H. LEATHAM
Chairman, Rural Section

COMMITTEE CHAIRMEN OF THE COMMERCIAL SALES SECTION

P. D. LAWRENCE
Chairman, Heating & Motor Applications Committee

B. J. JENSEN
Chairman, Lighting Committee

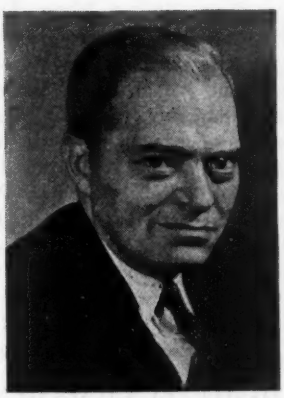
L. R. WEAVER
Chairman, Market Development Committee

J. S. SCHUCHERT
Chairman, Sales Personnel Committee

COMMITTEE CHAIRMEN OF THE INDUSTRIAL POWER & HEATING SECTION

E. M. CLAPP
Chairman, Competitive Service Committee

R. G. ELY
Chairman, General Power and Heating Committee

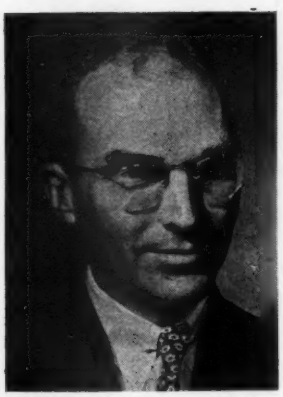


J. R. HARTMAN
Chairman, Industrial Lighting Committee

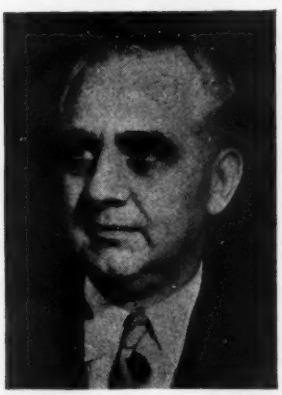
S. R. KNAPP
Chairman, Sales Personnel Committee

COMMITTEE CHAIRMEN OF THE RESIDENTIAL SECTION

E. T. MOORE
Chairman, Dealer Coordination Committee



E. B. HASKELL
Chairman, Electric Kitchen Committee



H. A. STROUD
Chairman, Lighting Committee

C. A. STEVENS
Chairman, Sales Personnel Committee

mittees of the Commercial Division. The entire division will hold an annual conference—its twelfth—in Chicago during next April, and already committeemen are working on reports and surveys to be given at this session.

Committee meetings in preparation for the annual conference in April will be held throughout the winter, the subjects to be dealt with ranging from heavy industry to chicken brooders, from better lighting in stores to adequate wiring in homes.

Merely to name the committees of the Commercial Division gives an idea of the numerous fields covered by this aggregation of light and power men. This division not only has several committees operating under the General Committee but several groups called "sections" under which a number of committees function.

It will be found in checking over the titles of the various committees in the Commercial Division that some of them have identical titles. As an instance, both the Residential and Rural Sections have a sales personnel committee composed of experts in these particular fields.

The Commercial Sales Section, whose chairman P. M. Alden, of the Philadelphia Electric Co., is made up of four committees—Heating and Motor Appliances, Lighting, Market Development, and Sales Personnel, headed respectively by P. D. Lawrence, of the Virginia Electric & Power Company; B. J. Jensen, Public Service Electric & Gas Co.; L. Ray Weaver, of the Philadelphia Electric Co., and J. S. Schuchert, of the Duquesne Light Co.

MISS FERN SNIDER
Chairman, Home Service Committee

The Industrial Power and Heating Section, whose chairman is Charles Snyder, of the Monongahela Power Co., is made up of four committees—Competitive Service, General Power and Heating, Industrial Lighting, and Sales Personnel, and are headed respectively by E. M. Clapp, Georgia Power Co.; Robert G. Ely, Public Service Electric & Gas Co.; J. R. Hartman, of The Cincinnati Gas & Electric Co., and S. R. Knapp, of The Connecticut Light & Power Co.

The Residential Section, whose chairman is Harry Restofski, has the most committees, because of the very nature of its scope. In this grouping are committees on Dealer Coordination, Electric Kitchen and Home Laundry, Electric Water Heating, Home Service, Indoor Climate, Lighting, and Sales Personnel; the chairmen are, in the order in which the committees are named: E. T. Moore, of the Virginia Electric & Power Co.; E. B. Haskell, of The United Illuminating Co.; H. P. Megargee, of the American Gas & Electric Service Corp.; Miss Fern Snider, of the Georgia Power Co.; E. A. Freund, of the Union Electric Co. of Missouri; H. A. Stroud, of the Monongahela Power Co., and C. A. Stevens, of the Public Service Electric & Gas Co.

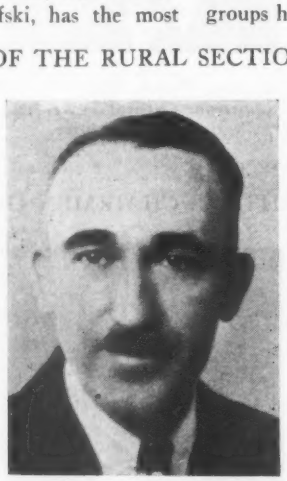
C. H. Leatham, of the Monongahela Power Co., is the chairman of the Rural Section, and the committees here are for studies in Equipment Distribution, Service Extension, Sales Personnel, and Farm Utilization. Chairmen are: R. T. Jones, of the Pennsylvania Power & Light Co.; H. J. Gallagher, of the Consumers Power Co., John L. Burgan, of the New York State Electric and Gas Corp., and Walter T. Ackerman, of The Connecticut Light & Power Co.

While the number of committees in the Commercial Division may seem unusually large, their number is not excessive when the wide field to be covered is taken into consideration. Already, some of the postwar studies of these groups have been put to considerable use.

COMMITTEE CHAIRMEN OF THE RURAL SECTION

R. T. JONES
Chairman, Equipment Distribution Committee

W. T. ACKERMAN
Chairman, Farm Utilization Committee



H. J. GALLAGHER
Chairman, Service Extension Committee

J. L. BURGAN
Chairman, Sales Personnel Committee

The Engineering Division

The Engineering Committees and General Committees, such as those dealing with Industrial Relations, Insurance, and Accident Prevention, performing continuous tasks as they do, have evolved quite successfully as continuing bodies. These committees have developed methods of work which comprise programs carrying over from year to year, with an orderly rotation of trained members to supply the required personnel. As a result of these practices, the demise of a

CHAIRMEN OF THE ENGINEERING DIVISION COMMITTEES

E. S. FIELDS
Chairman, Engineering Division, General Committee

H. S. FITCH
Chairman, Electrical Equipment Committee

P. M. LEFEVER
Chairman, Hydraulic Power Committee

committee for a particular year, or the birth of the succeeding committee, can hardly be noticed except for the customary biennial shift of chairmen (among the engineering committees) and certain annual adjustments among the members of the committees.

The rotation of chairmen is mainly the result of experience, and, by reason of the heavy programs of these committees, applies with particular force to the engineering committees. From an administrative point of view, it might be advantageous to retain experienced and efficient chairmen in office as long as possible, but this would be at the expense of denying like opportunities for experience to other promising candidates. Moreover, in most of the committees the required directive work is heavy enough to cause chairmen to be glad of their relief when it comes after what is often two years of pretty strenuous work.

It is, of course, desirable to limit the numbers on committees to manageable numbers; indeed, all of the existing committees started with 15 to 18 picked men. The increase in engineering committee membership to an average of forty, or perhaps a little more, has been directly due to specific requests from member companies for representation of their employees on particular committees. Such requests can hardly be denied, since membership on committees is apparently counted as one of the advantages of membership.

However, a high standard of attention and performance is ordinarily required, and quite reasonably in view of the activities of the committees. For these reasons it has been customary for chairmen to review their memberships annually.

The basic reason for this continuity of effort and the apparent immortality of the committees, particularly in the engineering field, lies in the uninterrupted technical progress of the industry and the relatively wide and inclusive fields of responsibility of the committees. These scopes have not been materially modified since their organization in 1933, when the object was to cover the field with the least practicable number of committees.

It is demonstrably true that there has not been a year since then that many topics requiring qualified engineering attention have not arisen. Under the existing organization, these problems found appropriate committees in being and competently organized to deal with them. Some problems have been disposed of summarily, but others have required studies often extending over several years. Each of these problems, however, was promptly and efficiently extinguished as a study or work project, as soon as a satisfactory solution was reached.

The alternative to the existing plan (aside from merely ignoring technical problems as they arise) consists in setting up special expert committees to deal with

J. A. MORRIS
Chairman, Meter & Service Committee

R. M. VAN DUZER, JR.
Chairman, Prime Movers Committee

L. R. GATY
Chairman, Transmission and Distribution Committee

such problems as they arose, it being the idea of course, to promptly dissolve such committees as soon as their mission should be accomplished. Having in mind the laborious task of recruiting new committees, and the necessity that they must commend themselves to the industry with respect to their ability and wisdom, if their conclusions are to be generally accepted, and having further in mind that the history of actual events indicates that the life of such committees would have varied from a few months to ten or twelve years, there appears to be ample reason for believing that the present mthod is by far the most efficient.

The committees do not, of course, design generating stations or distribution systems, or determine what the course of member companies shall be with regard to such operating problems as industrial relations, insurance protection, or safety. They do, on behalf of the individual units in the industry, take under consideration all technical or other developments affecting the industry in their respective fields, with a view toward gathering experience and opinion and offering or recommending courses of action which the industry, as a whole or as to its separate units, is free to take or leave according to the degree to which the recommendations commend themselves.

It seems fair to say at this point that the "batting average" of the engineering and operating committees is decidedly good.

The core of the organization of engineering committees consists of the three senior committees, each having a definite history reaching far backward beyond the date of the organization of the Edison Electric Institute, namely, the Prime Movers, Electrical Equipment and Transmission and Distribution Committes, dealing, as their titles indicate, with the fields of steam production of electric power, electrical equipment and apparatus, and outside plant.

In addition to these, there are the somewhat smaller and more specialized Hydraulic Power, and Meter and Service Committees. The Chairman of these committees for the current year are respectively: R. M. Van Duzer, Jr., of The Detroit Edison Co.; H. S. Fitch, of the West Penn Power Co.; L. R. Gaty, of the Philadelphia Electric Co.; P. M. Lefever of the Susquehanna Electric Co., and J. A. Morris, of the American Gas & Electric Service Corp. During 1945 a long-felt need for a General Engineering Committee to deal with broader engineering matters that transcended the field of any one of the existing committees, on which required coordination with the major economic or business policy aspects of operations, was recognized by the Board of Directors, and a new committee, known as the General Committee of the Engineering Division, or more briefly as the General Engineering Committee was set up and composed of engineers of executive rank, under the chairmanship of E. S. Fields, vice president of The Cincinnati Gas and Electric Company.

Inter-Industry Committees

As another means of bringing information to the industry the EEI has numerous representatives of inter-industry committees and on joint committees with other national organizations. These groups deal with matters of mutual interest to the electric utility industry and other industries. Such joint efforts are for the most part in the technical field, and especially in the field of standardization. Also, inter-industry relations in the commercial field continue to grow in importance.

Among such committees are the Electrical Committee of the National Fire Protection Association, which formulates and revises the code for interior wiring; the National Electrical Safety Code committee, sponsored by the National Bureau of Standards which formulates the code for overhead lines and so on; joint plant coordination committees with the Bell Telephone System, with the Western Union Telegraph Company and with the American Railway Association, dealing with specifications for overhead crossings, joint use of facilities, inductive coordination; joint committees on mitigating radio interference; joint committees dealing with allocation of bands for emergency and point-to-point communication; joint committees with the National Electrical Manufacturers Association on insulation standards, on preferred ratings for oil switches, test specifications for refrigerators, standardization of distribution transformers, etc. New projects involve standardizing water heaters, standardizing appliance parts to reduce service costs, agreeing on preferred ratings and sizes for larger equipment, etc.

This joint committee work includes the Better Light-Better Sight Program, drawing together the several interests concerned; and the Electric Water Systems Council, drawing together pump manufacturers and others. In the postwar period several more joint promotional projects involving different types of loads and electrical appliances will undoubtedly be engaged in. Joint activities involve also accounting questions, insurance coverages and rates, accident prevention, simplification of reports (National Advisory Committee on Government Questionnaires) etc. When a problem becomes of general concern and involves importantly other national bodies, in due course joint studies are entered into by the Institute through its committee system to work for the best answer for the industry.

The committees of the Edison Electric Institute composed of outstanding men in their respective fields, have long enjoyed high standing for the excellence and usefulness of their work. Their deliberations and conclusions have made valuable contributions to the forward progress of the power industry and will continue to influence the advance in operating policies, methods and practices and the developments, design and selection of equipment for production, distribution and use of electricity. In the postwar competitive power field several of these committees, acting singly and in conjunction with other committees and in collaboration with representatives of the electrical manufacturing industry and of the important power-using industries, will play a most important part in maintaining the economic strength of the nation and promoting the further growth of the electric utility industry.

The Path Ahead

With a Backward Glance

By C. W. Kellogg
President, Edison Electric Institute

Presented before the Indiana Electric Association, French Lick, Ind., September 27, 1945

COMING shortly after the inauguration of peace following the most devastating war in history, your Convention seems an appropriate occasion to look ahead along the path which the end of the war opens up before us in the electric service industry.

Standing on the divide between war and peace, we are in a position also to survey the long difficult climb we made through the war effort up to the recent heights of electric energy production. Since the confidence with which we can look ahead rests largely upon the nature of past achievements it would be well now to pause long enough to appraise what we have done. This may seem somewhat trite to many of you; but it is surprisingly easy to forget, and a concrete statement for the record should prove valuable in future.

How the Load Was Carried

In giving the overall figures of electric utility performance during the war, I have used as the measure of that performance the energy sold and delivered, since that was what really did the work rather than what was generated. The figures I am about to give include the whole industry—electric service companies, government and municipals—which in 1944 contributed to the total in the approximate proportion of 82, 14 and 4. From 1939 through 1944 total electric energy sales per annum grew 87.3 per cent. If load factors, reserve margins in per cent and other ratios existing in 1939 had remained the same throughout the war, it would of course have been necessary to increase generating capacity also 87.3 per cent, or from 40.3 to 75.5 million kilowatts. What actually happened was to increase generating capacity to only 50.3 million kilowatts. How is this difference explained? (See table below.)

In this way 10 million additional kilowatts were stretched out to do the work which, but for the conditions mentioned, would have required over 35 million additional kilowatts.

Utility War Power Forecasts

It might be fitting to attribute this happy result to good luck, for which the electric service companies, which furnished most of the service, were entitled to no particular credit but for two things:

1st. The lion's share of these economies were specifically predicted by the writer long before the event, and

2nd. These predictions when made were repudiated and ridiculed by certain government officials, who continued their dire croaking about an impending "power shortage" (which they began way back in 1935), even after the WPB in 1942 had cancelled, as not absolutely necessary, orders for 2,200,000 kilowatts of electric generating capacity then in various stages of manufacture or installation.

In my Presidential Report in June, 1939, before the war started, under the heading "No Power Shortage," I stated that the then annual output of 140 billion kilowatthours could be increased by longer hours of operation alone by 40 to 50 million kilowatthours. The actual gain, subsequently shown from this source alone over the 1939 conditions, was 54.3 billion. In the same report, commenting on the increase since 1917 from 2828 to 3294 in the kilowatthour output per kilowatt of capacity, I stated that under war conditions this figure could easily go to 4200. That figure was approximately reached in 1942 and it was in excess of 4600 in both 1943 and 1944.

In the corresponding annual report of June, 1940, when Germany was overrunning France, I again spoke of the effect of increased load factors and called attention also to the effect of interconnections in keeping down the size of coincident peaks and to the value of the initiative and efficiency of the engineering and operating forces. All of these were effective before the war was over.

In the 1941 June Convention Report, after detailing generating capacity increases of nearly 9,300,000 kilowatts then scheduled for the future, I stated that 10 to 15 per cent of generating capacity could be drawn from reserves. The actual draft at the war peak was about 11 per cent, representing, by the way, in large measure the generating capacity cancelled by WPB in the following year. I spoke again in that report about further help from higher load factors, giving the then expected gain from this source as 20 per cent. The actual increase from this source subsequently shown, over the conditions in June, 1941, was 24 per cent. In the same report I called attention to the ability to gain 10 to 15 per cent in capacity by overload operation of generating units over the peak. We have no reports on the extent to which this was done but the possibility still stands.

In my year-end release in January, 1942, I stated that the growth of energy requirements for war production might be expected to amount to 0.6 kilowatthours for each dollar of increase in war expenditure. I was bitterly criticized at the time for this estimate by the FPC which maintained the correct ratio was

1. Starting in 1939 with installed generating capacity of	40,300,000 kw	or 100 %
2. There was added in new generating capacity through 1944 approximately	10,000,000 kw	or 25 %
3. There was saved by higher load factor (resulting from longer hours of operation, metallurgical loads, war time, etc.)	17,000,000 kw	or 42 %
4. There was a draft on spare capacity (on a percentage basis, through greater use of interconnections and shortening maintenance schedules) of approximatly	5,000,000 kw	or 12.3%
5. And finally, by cutting down company use and losses in transmission and distribution from 18.6% to 13.8%, there was saved	3,200,000 kw	or 8 %
Thus accounting for the full theoretical need of	75,500,000 kw	or 187.3%

THE PROMISE

For the Record

JUNE 1940

Utility Leaders Analyze Problems Confronting the Power Industry

Companies Ready to Meet Any Defense Program Needs

C. W. Kellogg Addresses Annual Edison Electric Institute Convention

Expansion Question Discussed

UTILITIES GEARED TO AID DEFENSE

Kellogg Says Power Supply Is Adequate Without Need for Speed Expenditure

UTILITY AID PLEDGED TO ARMS PROGRAM

Kellogg Pleads for Minimum of Additional Regulation at E. E. I. Meeting

Utilities Ready To Aid Defense

Facilities Ample, Kellogg Holds At Edison Session

Power System Held Ample for Any War Need

Output and Sale Of Power Sets New High Mark

Largest Gains Reported in Industry, as Leaders Gather for Edison Parley

JUNE 1941

ELECTRIC POWER SUPPLY AMPLE, SURVEY OF COUNTRY DISCLOSES

Big Reserve Ready to Help Industry Boost Output

POWER FACILITIES ARE HELD ADEQUATE FOR DEFENSE NEEDS

However, Utilities Must Get Priorities on Equipment, Kellogg Warns

POWER RESOURCES CALLED ADEQUATE

Edison Institute Head Sees No Defense Shortage

Defense Found Past Schedule In Construction

CLOSER TIES SEEN IN POWER PROJECTS

Utility Men Stress Point of Co-operation—Weigh Plans to Expand Federal Units

Power Adequate, Kellogg Says

COST OF ARMS PUT AT $100,000,000,000

W. L. Batt of OPM Says 20% of Income Will Be Needed for Output for War

SPEAKS TO UTILITY GROUP

Industry Told to Ignore the Problem of Surplus Capacity After the Conflict

JUNE 1942

Sufficient Electric Power Available for War Industry Output, Says Utilities Spokesman

Kellogg's Assurance Based on Analysis of Two-Year Demand—Some Civilian Curbs

Power for All War Needs Assured, Conference Here Is Informed

Utility Preparedness Cited As Basis for War Services

Limitation Points to Normal Cooperative Operating Position—Power Shortage for 1943 Is Indicated

SEES AMPLE POWER FOR WAR ACTIVITIES

Ample Power Supplies Seen For War Need

ALL POWER NEEDS HELD FILLED IN WAR

More Service Problems Are Expected, Harrison and Kellogg Tell E. E. I.

Reproduced from June 1942 EEI BULLETIN

THE FULFILLMENT

JUNE 1943	JUNE 1944	JUNE 1945
NO POWER SHORTAGE	NO POWER SHORTAGE	NO POWER SHORTAGE

THE PERFECT TRIBUTE

As General Reybold said: ". . . the magnificent contributions of your industry, for the most part, have gone unheralded . . ." —*and General Kuldell noted:* ". . . you get no Croix de Guerre, you get no medals, you get no citations for keeping your utilities in constant and smooth operation."—*Nevertheless, as Admiral Monroe put it in the perfect tribute:* ". . . you delivered, each and every one of you . . . When we called for power we got power and not—thank God—alibis."

2.5, four times as great as mine; but the subsequent record shows that my estimate was high rather than low. In the three years 1942, 1943 and 1944, the average monthly ratio between (1) the increase in industrial energy sold plus sales by public authorities, and (2) the increase in war expenditures (both compared to the previous year) was 0.58.

From 1942 onward it was clear that the war power situation was completely under control so that subsequent annual reports merely reported on the progress of energy output, peaks, reserves, etc.

The reason for this somewhat lengthy recital is merely to show for the record that the successful handling of the nation's electric power requirements for the war was not the result of luck but of the application of principles and methods clearly foreseen and clearly enunciated before the war began and in its early stages.

Let us look now at the war record of our competitors in the estimating business, the FPC.

FPC War Power Forecasts

In the spring of 1935 the FPC predicted that there would be a critical shortage of generating capacity upon the resumption of predepression industrial activity. Two years later the Federal Reserve Board Production Index stood higher than its previous all-time peak in 1929 but there was no power shortage. In the fall of 1939 FPC predicted a shortage of 3,260,000 kilowatts in 1941; three months later it reduced this prophesied shortage to 1,300,000 kilowatts. A year later (preparedness having then started) it predicted no shortage in 1941 but 1,500,000 kilowatts shortage in 1942. Nothing adverse happened in 1941 capacitywise, although there was a drought-induced shortage in the Southeast.

In July, 1941 (before Pearl Harbor), peak loads were predicted by FPC as follows: (To these I have added actual figures for comparison.)

	Peak Predicted in 1941	*Actual Peak*	*Error*
1941	33,944,000 kw	31,619,000 kw	2,325,000 kw
1942	39,615,000 "	32,942,000 "	6,673,000 "
1943	42,732,000 "	37,964,000 "	4,768,000 "
1944	45,038,000 "	37,857,000 "	7,181,000 "

After 1941 the FPC gave up discussing peaks in kilowatts and switched to kilowatthours, apparently, however, with no better success. In April, 1942, they predicted 255 billion kilowatthour output in 1943. Actual output for that year was 221 billion. The following month they predicted 300 billion total for 1943 (presumably including factories). The actual figure was 267.5. Their last prediction, in the fall of 1942, was shortage in Western New York in the winter of 1943-44. It did not occur.

In February, 1942, Mr. Olds predicted that in 1943 between 30 and 40 per cent of curtailable energy would have to be curtailed. This was on the basis of $56 billion annual defense expenditure; in 1943 these expenditures were actually about $82 billion. There was, of course, no curtailment of energy in 1943.

It seems clear that besides their unfamiliarity with the business, the FPC never allowed for the extent to which war work was bound to supersede civilian activity. In addition to the error already mentioned arising from estimating too high a ratio between war expenditures and energy requirements, they used also for estimating purposes the ratio of kilowatthours to men employed. As I showed in my paper to the Midwest Power Conference in the spring of 1943, this method produced errors on the high side of 6,000,000 kilowatts. Evidently no allowance was made for displacement of civilian activity by war. As I pointed out in my Springfield paper that year, from 1941 to 1942 war workers grew from 6.9 to 17.5 million, a gain of 10.6 million; and in the same period 7 million were added to the armed forces. Yet during this time total industrial employment gained only about 1.5 million. In my Presidential Report of 1943 I noted that two-thirds of all industrial production was being devoted to war.

There is a much more important angle to this matter than the mere question of accuracy of estimates. From the viewpoint of the nation, the production of electric generating capacity called for by the prophets of "power shortage" would have been in direct competition with the equipment sorely needed at that time for the production of synthetic rubber, high-octane gasoline and essential naval construction.

So much for the look behind. We can take pride in the fact that we were prepared and that we knew our business better than our critics. I have stated what I have merely for the record. We have plenty of problems facing us in the postwar world which should engross our attention now rather than to spend any more time merely contemplating the past.

The Look Ahead

The first effect of the cancellation of war orders has, of course, been a reduction in the consumption of electricity in industry. This need not appall us; it will give an opportunity for the resumption of maintenance schedules disrupted by the long hours of war service.

Beyond that we have before us the great task of filling the ranks of our commercial forces and of training them for the huge sales and development program that lies immediately ahead. For this purpose we have as a guide the carefully prepared, detailed reports of our Postwar Planning Committees giving the nature and scope of the commercial possibilities and we have the plans for sales training that are being developed by our Commercial Section committee.

We have the general problems of maintaining and improving the standards of our service, the morale of our organizations and our relations with our customers, all basic matters calling for our best efforts. The relaxing of the imperative demands of war production should give us more time for the study and research which in the past have led us to constantly greater achievements. We have never allowed the theoretical lack of competition in our business to lull us into complacency and we must never do so. We know that although in general our position in our own territory is relatively secure, yet that we constantly face a determined and well organized gas competition, the need for constant vigilance in conserving our industrial power business against private plant competition and the urge to meet the constantly higher standards of illumination which we ourselves have set up to attain.

Intra-Atomic Energy

Prominent among matters of future research will be the possible use of intra-atomic energy in the production of our power supply. The relatively enormous amount of this energy compared to the weight of matter involved had been known for some time before the war, but the atomic bomb represented the first time it had been extracted in large quantities and used. Physicists assure us

that the rate of release of this energy can be controlled—that it need not necessarily be explosive—but the principles involved are so far beyond the range of previous human experience that the most thorough-going investigation will be required before utilization of atomic energy as a heat source will be practicable. The question of cost is also a fundamental one since after all present fuel costs are only about one-sixth of the total cost of furnishing electric service and so far at least the release of intra-atomic energy has been a very expensive process.

Federal Government Competition

It would be ostrichlike to blind ourselves to the most serious competition we have ever encountered in our history; in the entry of the Federal Government into the electric service field, armed with the lethal weapons of tax exemption and interest-free federal funds. In defending ourselves from this attack, we should count as allies the general economic situation and the American sense of fair play.

With regard to the first of these, it must surely be dawning on all minds that for our country economy must be the watchword from now on. With a national debt approaching $270,000,000,000 owed by the government to 85 million holders of war bonds who must on no account be let down; with the necessity of reducing the tax load as rapidly as possible in order to get business back on its feet; and with the need of helping the starving millions in other lands to keep alive and get going again, our resources, great as they are, will be stretched to the limit. Not one cent of government credit or of government tax income can be spared for anything not absolutely necessary—least of all for things like water power, which is demonstrably less economical than steam, or for excursions designed for the government to compete with its taxpaying citizens in their business.

This leads to the consideration of our second ally. Much stress has properly been laid by our government on the need for rehabilitating the small business man and for seeing to it that he gets an equal chance with the big fellow to get started again on his own. Surely no one can appreciate more keenly than he the unfairness of his own government, which he has created and supports for his own protection, going into competition with him, using the financial power with which he has endowed it to crush him through tax exemption and other subsidies. He can understand what it would mean to him to have a competitor down the street who paid no rent and who didn't have to (as he does) pay interest on money borrowed from the bank to get started.

There are indications that the government bureaucrats themselves are very sensitive to the unfairness of the tax exemption and freedom from interest they enjoy; and it is incumbent on each of us to drive this point home on all occasions in our public contacts.

Farm Electrification

Another matter that should engage our best efforts at this time is the vigorous continuation of the efforts, inaugurated by our industry 45 years ago, to get electricity out to unserved parts of the rural areas and to educate the farmers now getting electric service to improve the efficiency of their farm operation by its increased use.

You know, of course, of the present three-year program of the electric service companies for extending service to farm areas, which involves an estimated construction cost over the period of a quarter of a billion dollars. Our survey indicates that electric lines to be built under this plan will reach approximately 600,000 additional farm customers and should add altogether about 1,000,000 new rural customers of all classes. This number of farms, together with the number the rural cooperatives may be expected to reach during the same period, should reduce the number of farms without electric service to but a few hundred thousand of the more isolated farms of the country. In a word, after completion of the three-year campaign now under way, the farm electrification program will be measurably solved so far as getting service to the farmer is concerned.

There is some misunderstanding about the true size of the remaining farm electrification job. It is not nearly as big as many suppose. The total number of farms in this country has decreased somewhat in the past decade; many farms are tracts of land on which there are no buildings, and on many other farms all buildings are vacant. Another point overlooked is the fact that existing distribution lines reach several hundred thousand farms which do not yet take service and all of these must be deducted from the total farms in arriving at the number of farms to which distribution lines have yet to be built.

Preliminary figures issued by the Bureau of the Census summarizing its April, 1945, Census of Farms indicate that the total number of farms in this country is about 6,000,000, compared with 6,100,000 in 1940 and 6,800,000 in 1935. Developments in farm machinery have increased the acreage one man can farm. This tends to reduce the total number of farms. The automobile and tractor cause many farmers to live in town and farm at a distance, which is another factor in reducing the number of farms to which electricity will have to be taken.

Based on figures in the 1930 Census, there are about 300,000 farms which are tracts of land without buildings. The Housing Census, taken in October of last year and reported in July of this year, indicated approximately 1,200,000 vacant farm dwellings throughout the country and, although most of these were tenant houses, it is reasonable to assume that at least a half million farms had no occupied dwellings. Many of these vacant farm dwellings, it may be assumed, will be reoccupied in the next two or three years, but it is conservative to estimate that there will still be 200,000 farms with vacant dwellings.

It is generally believed that 5 per cent of the farms of the country are beyond the practical reach even of subsidized distribution lines, and if they are to be served with electricity it must be by small isolated farm plants. Adding together 300,000 for the farms without buildings, another 200,000 for the farms with all dwellings vacant and another 300,000 beyond practical reach of power lines, we have a total of 800,000 farms that are not candidates for electric service from distribution lines. Subtracting this from the 6,000,000 total we have left 5,200,000 farms which are either already served or are candidates for service from such lines.

A recent questionnaire sent out by the Edison Electric Institute reveals that farm electrification is now going ahead at the fastest rate in its history and that by the end of this calendar year there will be approximately 3,100,000 farms taking electric service with many more farms already reached by distribution lines. The 1940 Census showed that there were 927,000 farms within a quarter of a mile of existing distribution lines but not taking electric service. Since that time many of these farms have taken service but many more miles of

(*Continued on page* 308)

Opportunities in the Electrical Industry

Hitch Your Wagon to a Star!

A section from a handbook for discussions before returned servicemen of Cleveland, by J. E. North, president of Electrical League of Cleveland.

FOREWORD

It seems fitting that many of the young men and women of the Greater Cleveland area should look to the Electrical Industry for their careers.

It seems fitting, because it was in Cleveland that many of the important, early developments in the Electrical Industry took place.

While the information set forth herein, can be applied universally to the Electrical Industry, by and large, reference is made to jobs that are to be found in the Industry in this area.

A complete listing and discussion of the jobs and opportunities in the Electrical Industry would literally require volumes.

It would never be complete, because the constant growth of the Industry, with its ever increasing applications of electrical energy to lighten the burdens of mankind, is continually opening new fields for those with initiative, enterprise, and a willingness to work.

The following pages briefly touch upon the opportunities that exist for those with a flair for management, scientific research, engineering, and production, as well as the installation and service of electrical equipment.

The all important field of distribution, the sale of electrical equipment and services to the factory, office, store, and home, is considered at greater length.

It is to be noted that there are countless jobs in the Electrical Industry in which one can be successful without being an electrical engineer or an electrician.

WHAT makes the Electrical Industry an unusual and outstanding industry? Why does it afford greater opportunities than other industries? Why should you consider the Electrical Industry as the field for your life work?

Lines cannot be drawn so that each of these questions can be answered individually—there is bound to be some overlapping.

First of all, the Electrical Industry is young and vigorous.

That it is young is evident from the fact that 66 years ago, within the memory of men still living, electricity was still in the laboratory stage. At that time, invention and development held the attention of Charles F. Brush, a world renowned Clevelander, and Thomas A. Edison, a native Ohioan, as well as countless other scientists.

(*Continued on next page*)

How Service Men in Cleveland Are Learning About Opportunities in the Electrical Field

STAGE and film celebrities get all the publicity but not necessarily all the attention when they appear at veterans' hospitals—as witness the presentation by the Electrical League of Cleveland before the wounded soldiers of Crile General Hospital a little less than a month ago.

"Will you tell the 2,000 men in Crile Hospital about the opportunities in the electrical industry?" was the question put to J. E. North, general sales manager of the Cleveland Electric Illuminating Company and president of the Electrical League of Cleveland.

The result of this request was not only an address before the veterans but a survey which resulted in a handbook possibly unique in the electrical industry, a handbook for discussion leaders that tells the returned veteran what sort of skills are needed in the industry and what sort of opportunities exist in the fields of management, research, engineering, production, and the installation and servicing of electrical equipment. A section of the handbook appears in this issue of the EEI BULLETIN under its title "Opportunities in the Electrical Industry."

Mr. North made his address in the auditorium of the Crile Hospital before veterans able to assemble in the auditorium and his voice was carried over a public address system to every veteran in the hospital who chose to listen.

Mr. North has spend the greater part of his life selling things. In the case of the handbook he was "selling" a product to which the chief executives of the 316 companies belonging to the Electrical League of Cleveland had contributed.

Immediately upon accepting the invitation to address the men at Crile Hospital Mr. North wrote to all of his League colleagues. His letter said:

"I have been asked to make a talk at Crile Hospital, over their own broadcasting system, to the men who are or may be interested in jobs in the electrical industry in Cleveland.

"It is my plan to tell the veterans briefly about the fascination of the business and the exceptional opportunities to do good things for people.

"In addition, I would like to be in a position to be more specific. For example, I can cite many cases and give specifications for job within the Illuminating Company.

"I am writing all League member company executives, and my general question is 'What jobs do you have to offer in a factory, shop, engineering department, office, advertising, sales promotion, and sales?'

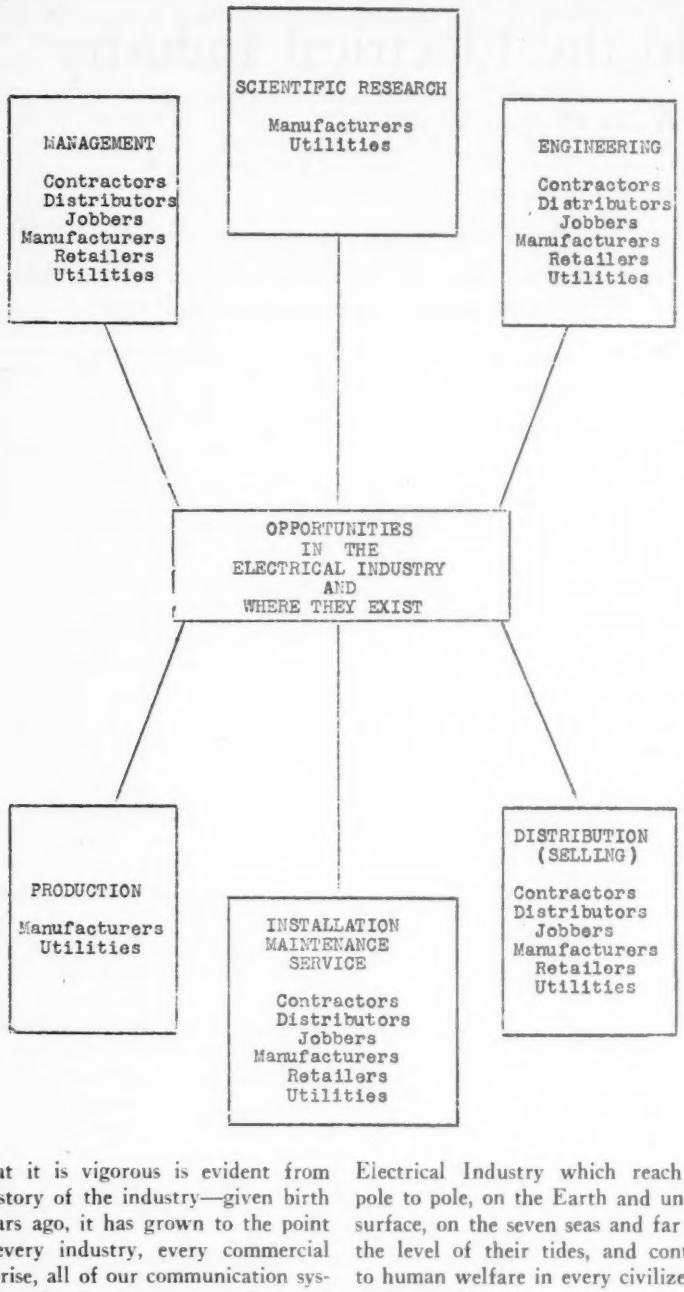
"For the jobs you wish to fill, will you please set up the qualifications with reference to: (1) education; (2) experience; (3) general qualifications, age limits, salary limits, and others."

There were many replies. They ranged from specific offers of jobs to the information that a firm was preparing its own handbook about the opportunities it offered in selling electrical goods, in production, in research or whatever the case. Thus Mr. North had the opportunity to draw on all of these replies in putting together his own presentation covering the entire industry.

Mr. North drew chuckles from his audience by giving a thumbnail sketch of his own career in the electrical industry. Substation operator, "flunky" to an electrical engineer, maintenance engineer and construction superintendent were some of the steps that led to selling. Mr. North mentioned casually that in one of these positions he was "privileged to work days, nights and Sundays for $37.50 a month."

At the conclusion of the sketch of his career Mr. North made it obvious that he was not making himself the topic of his speech aimlessly. He said:

"I tell you these things about my personal experience only to make one point. Unfortunately, I didn't have the guts to go to college. When I look back over those years of long hours and short salary I realize that I was being paid to go to school. It is my own experience that makes me emphatically recommend to every man within sound of my voice, regardless of age, that he finish his high school training and if at all possible get a college degree."



That it is vigorous is evident from the history of the industry—given birth 66 years ago, it has grown to the point that every industry, every commercial enterprise, all of our communication systems, much of our transportation, and virtually every home in the nation is either directly or indirectly dependent upon it in one way or another.

Such growth must be warranted, and such growth must offer attendant opportunities. Here, again, the history of the Industry is made up of the recorded achievements of thousands upon thousands who had vision and initiative, and were willing to work.

True, some parallel examples can be drawn with other industries, but they pale into insignificance when contrasted with the far-reaching branches of the Electrical Industry which reach from pole to pole, on the Earth and under its surface, on the seven seas and far below the level of their tides, and contribute to human welfare in every civilized part of the world.

Even at this stage, the Industry is still in its infancy—in the future it will contribute more and more to the well-being of mankind. Scientific research being done today will lead to the development of new electrical equipment that will render new services in the factory, office, store, and home of the future.

Based on the records of the past, it is a progressive Industry—one that has forged ahead—one that will continue to forge ahead—one that will offer more and more opportunities year after year.

Why shou'd you consider the Electrical Industry as the field for your life work? From the foregoing, you can draw your own conclusions—remember only that it is a young industry, from which the very fiber of the American Way of Life is spun—one upon which every one of your are in some measure either directly or indirectly dependent.

Opportunities in the Industry for you? —Hitch your wagon to a star—the ceiling is unlimited—it all depends on you.

MANAGEMENT

There Is Always Room At the Top!

Top Management is the term commonly applied to the officers of a company—the president, vice-presidents, secretary, treasurer, and their assistants, as well as the chairman of the board, and the directors.

Every individual is engaged in some form of management—that is, the management of his own personal affairs from day to day. Everyone who works has the problem of completing the job that is assigned to him and this involves management in one of its basic forms.

When one becomes responsible for the work of one or more people the responsibility of management in business really begins to take form.

It is the rightful aspiration of every capable and energetic young man and woman who have as their objective a place in the top management group.

These are the people who direct the course of the company—who make final decisions, and upon whom the ultimate success of the company depends.

They, of course, cannot do this without the help of many others in the capacity of managers and supervisors, and finally, they are dependent upon each and every worker in their organization.

Where do the people at the top come from? In most businesses they come from the ranks. The history of American business shows that most of the top executives in every field of endeavor, are capable men who were willing to work and have risen from the ranks—and many from the humblest of beginnings and the most menial tasks.

What's at the top in the Electric Industry for you? Every executive position that is common to American industry, plus the fact that the Electrical Industry knows no frontier, that it is almost universal, that it is progressive, that it is still a young industry, and affords you plus opportunities all along the line.

Where are these top management jobs? With utility companies, manufacturers of electrical equipment, distribu-

tors and jobbers of electrical equipment, installation companies, and retailers.

Note the broad span of the Industry—you might say that there are industries within the Industry.

Note, too, the fact that there is need for managerial ability all along the way—from the gigantic multi-million dollar corporation, where management must make decisions regarding the manufacture of products that are to be sold from coast to coast and involve the employment of countless thousands of people, to the smallest retail outlet where the owner decides the steps that are to be taken to develop a business that will be profitable to himself and render a service to the members of the community in which he is located.

Don't forget that the man who operates the small retail store has all of the problems of management that the president of the large corporation has, but of course, they are scaled to miniature in some respects.

Managerial ability is rewarded in direct ratio to the responsibility assumed—therefore, top financial returns belong to top management, whether it be in the largest or smallest corporation or business.

One must not lose sight of the fact that many of those who successfully manage their own small business enterprises, frequently enjoy financial independence on a plane equal to those who shoulder the burdens of larger corporate management.

There is always room at the top—for the right man—that's the way of American enterprise and life.

SCIENTIFIC RESEARCH—ENGINEER

"What Makes It Tick?"

From the earliest times men have been interested in the world about them—they wanted to learn the composition of the things that surround them, they wanted to know why, under specific conditions, certain reactions took place.

This curiosity led to the development of many theories by the philosophers of ancient times and later to the development of these theories and countless others by specialists known as scientists.

The scientist in the modern research laboratory is constantly working to discover fundamental principles, or to develop known principles for specific application. In many instances the scientist is called upon to explore the unknown to develop a specific application of electricity and electrical equipment to a known need.

For example, the scientist learned about magnetism and electricity, and the fundamental principles of its action and behavior. With this background knowledge he developed the electric motor and generator. The motors so developed were then engineered to do specific jobs.

The scientific research and engineering that is done to fill a specific need is illustrated by the following: Certain problems of heat treating and hardening of metals were slowing down the production of vital war materials. The scientist in the laboratory knew about dielectric heating—that is, heating with electricity in the very short wavebands, and he was quick to see its possible application to the problem at hand. Upon determining that dielectric heat could do the job, it became an engineering problem to design the equipment applicable to the specific job.

Unparalleled is the field of research and engineering in the Electrical Industry. The veil has hardly been lifted from the secrets that the unknown still holds. Electricity will continue to become more and more the servant of mankind. This progressive increase in use will demand greater scientific knowledge and applied engineering.

For the inquiring mind, for the one that wants to know "What makes it tick?" the Electrical Industry offers romantic adventures in research and engineering.

PRODUCTION

Can We Improve Production Techniques?

When we speak of production as it relates to the Electrical Industry, we must think in terms of the production of electricity by the utility, the production of electrical equipment in the factory, and the manufacture of other products, as well as electrical products through the use of electrical equipment.

The production of electricity, in turn, is closely allied to the transmission and distribution of electrical energy. Production, of course, refers to the generation of energy by the turbine, transmission refers to the high-voltage system of wires through which the electricity leaves the generating station, and distribution indicates the wiring system that carries the energy to the point of use.

Through the years, great strides have been made in the production, transmission and distribution of electricity. The improvements have lowered costs and improved the quality and continuity of service. The men engaged in this work include electrical engineers, as well as those with little or no technical training but with a natural aptitude for mechanics and things electrical. All of them can foresee continued progress and they look to the future with optimism and enthusiasm.

The production of electrical equipment ranges from the manufacture of the most complex and precision products, such as a gigantic turbine, to a simple item, such as a small insulator.

Obviously, the production of electrical equipment opens countless jobs in thousands of categories that include the technically trained, as well as much less-skilled labor.

The constantly increasing use of electricity in industry, has created a growing demand for people with a knowledge of electricity and electrical equipment. It is well that we think momentarily of what would happen if the flow of electricity to industry was stopped for one minute, one hour, or one day. What would happen to production, to jobs, to you, to me? It is worth remembering that in the assault on Germany, electric power plants were prime objectives, because their destruction meant the demoralization of industry.

Can we improve production techniques? If we should answer this question with a "no," the inventive genius of man will have failed—progress will be at an end. There will always be jobs, and good ones in the production phase of the Electrical Industry and those which it serves so well. It is truly an interesting sphere of work for the technically minded.

INSTALLATION MAINTENANCE SERVICE

There's a Place for You!

Once electrical equipment has been produced, whether its end use be in the factory, office, store, or home, wiring must be installed to carry the energy for its operation, and the equipment itself must be installed, ready for use, and after it is put in service, provision must be made for its maintenance and repair.

Electrical contractors employ skilled workmen to install the necessary wiring, and these men install much of the electrical equipment and apparatus. Properly installed, the user can be assured of maximum satisfaction and complete safety in its use.

Industrial plants and commercial

buildings employ staffs of trained technicians and electrical maintenance engineers to keep this equipment at top operating efficiency and in good repair. In addition to routine work, these men must have a good working knowledge of production and engineering practices, an understanding of the economics of production costs, and a sort of sixth or inventive sense that guides them in recommending new ways to do a better job.

Profit is not the only reward for those who service and repair the electrical equipment in the home—they can take personal pride in their vocation, and know that they are contributing directly to the higher standards of living that we in America enjoy.

These men not only "fix 'em up and make 'em do" during emergencies such as those that exist during the years of all-out war, but through the knowledge that they gain under actual operating conditions in the home, many refinements, improvements, and new products are developed as the result of their reports to manufacturers. Many men who service domestic electrical equipment, work directly for manufacturers or jobbers, but far more are self employed, and operate their own independent business establishments—another illustration of the American way of life at work.

Apprenticeships and training periods qualify young men, who are technically inclined, for the work of wiremen, maintenance men, and repair men. A study of the fundamentals of electricity in school is definitely beneficial, but not a requisite for all jobs.

With the expanded use of electricity, all of these branches of the Industry will hold greater opportunities than ever before. If you like construction, maintenance, or repair, there's a place for you in the Electrical Industry.

DISTRIBUTION

Sales Make Jobs

Obviously, every segment of the Electrical Industry is made up of departments that parallel the organization of other industries. Consequently, there are innumerable other jobs, such as clerical work for the sake of one example, which have not been accounted for in this brief outline.

Have you ever considered what actually makes these jobs? Somewhere along the line, someone had to make a sale—someone had to exchange something, most likely money for goods or services —or someone had to sell an idea to a second party.

Dating back to the days of early history, the days of barter and trade, before money became a medium of exchange, the candlestick maker traded his wares with the baker or farmer or other suppliers of his immediate daily needs. Building up a stock of candles, he was soon able to trade them for things other than his daily needs—and those with whom he traded became busy supplying the things he wanted, and so the action of trading, coupled with man's innate desire to acquire property and other possessions, accounted for putting people to work.

Selling today is far remote from the barter and trade system—its techniques are highly refined and based on principles as sound as those which guide scientific research.

It is in the distribution branch of the Electrical Industry that one will find the greatest opportunities to serve themselves and to serve others. They can serve themselves by earning high financial reward with the satisfying knowledge that they are making a direct and an appreciable contribution to the ever improving standard of living in America. The sale of electrical equipment and service to industry has contributed materially to the high standards of living to the working man; electricity, through its numerous uses in commercial establishments, has done much to raise the American standards of distribution far above those in any other part of the world; electricity on the farm has lightened the burden of the farmer and aided him in efficiently improving the productivity of his soil; too numerous to mention are the applications of electricity in the home that have contributed so much to the well being of the American family.

Why is serving others particularly gratifying, and if it is, how do you go about it?

In years to come, you will be more able to fully realize the meaning of, and the satisfaction that comes to you, from serving others. Let us consider the blocking backs on Notre Dame's great football team. It is the running back who stops in the dressing room and says to the blocker, "Thanks for taking that last man out—I'd never had made it if you hadn't gotten him."

Personal satisfaction—yes, a lot of it for that blocking back—he knew that he had helped his fellow player, his team, his school to win.

So it is in the Electrical Industry, and in sales work particularly.

As you walk the streets of downtown Cleveland sometime, just think how our buildings would be spread out if electric elevators were not in use to serve the tall buildings that surround you.

True, the scientist and the engineer developed the elevator, but someone had to sell the property owner on the idea of building a structure more than ten or twelve stories high, which was the maximum that hydraulic lifts could serve.

What satisfaction was there for the salesman as he stood by at the grand opening? He knew that he had increased the value of the land on which the structure stands, that he had provided many additional light, airy, comfortable offices for thousands of workers, that he had assisted the owner in making more money, that buildings of the future would be patterned after this one, and that a bigger and better city would be developed.

Personal satisfaction—yes, plenty of it, and in years to come you will weigh every undertaking, not only in terms of dollars and cents, but also in terms of pleasure in doing it and the personal satisfaction that will accrue.

Is selling an important job? Merely remember that unless people buy the products of industry, production stops. It is a known fact that people will not buy more than their immediate needs, and frequently not that much—they must be sold. That people must be sold is evident—even war bonds, the best buy in the world, had to be sold through aggressive sales campaigns.

The importance of selling is emphasized by the fact that the salesmen of America must sell 40 per cent more goods after the war than they did in 1939, if we are to keep our productive capacity at a level that will produce prosperity.

Now what is the distribution picture in the Electrical Industry, and what are the job opportunities?

Distribution is the term that American enterprise uses to describe the channels through which products flow to reach the ultimate consumer or user.

In some instances the product is sold directly to the user, as in the instance of a turbine which is sold to the electric utility which puts it in service.

In other cases the product is sold by the manufacturer to a jobber or distributor, who in turn carries it in stock in his warehouse and sells it to the user. These

products are usually called shelf articles to distinguish them from those that are made for a specific application. Switches, insulators, certain types of motors, wire conduit, and countless other articles fall into this classification and are sold by the jobber to the user, which is usually an electrical contractor, industrial plant, or commercial building.

Another pattern of distribution follows the channel from manufacturer to jobber or distributor, to dealer, to user. This is exemplified by electrical appliances and certain other equipment which usually follows this line.

Electric utilities produce electricity which is used by the purchasers of electrical equipment in the factory, office, store, farm and home.

In broad terms, the manufacturers who produce this equipment class it as apparatus (ranging from the smallest wiring devices to massive turbines), transportation equipment (electric and steam for land and sea), lamps (the light sources themselves), fixtures and portable lamps in which these light sources are used, appliances and merchandise (the full range of household appliances from the range, refrigerator, air conditioning equipment, etc., to the smallest electrical items such as a toaster, bottle warmer, or egg cooker).

Some manufacturers produce goods in all of these categories, while others specialize in one or more.

In the instance of electric utilities, it is necessary for them to keep their customers informed about the new equipment that will serve their needs better than the type they are now using, whether it be in the factory, office, store, farm or home.

True enough, they do not go around taking orders for electricity in the sense that other salesmen sell their products. It is their job to acquaint their customers with the economies possible through the use of new electrical equipment and new applications of electrical energy.

Theirs is truly the creative type of sales work that requires what someone has called "Imagineering"—the vision and imagination that stimulate new ideas for the use and application of electricity and electrical equipment.

Those who work with industrial customers, including electric transit systems, and the other large users of electricity in the commercial field, such as department stores and office buildings, are usually graduate electrical engineers. This background is considered necessary to solve the complex problems that arise, and to be able to satisfactorily serve the growing needs of customers in these fields.

Likewise, the manufacturers of equipment that is sold to such users, whether it be transportation equipment, the electrical giants that are used in industry, or improved and modern lighting equipment, usually insist upon technically trained men for their sales force.

The utility and manufacturer employing young engineers for work of this type, supplement their formal education with special training courses. In fact, some of these training programs take as long as two years before the salesman is qualified for one or more lines of specialized sales engineering.

Manufacturers have salesmen on the staff at the home office, and usually have branch or regional offices where the salesman can advance to important posts of management.

It is in sales work of this nature that the technical graduate can find all of the romance of the research worker, enjoy the ever-changing picture of seeing new faces, making new friends, and serving more and more people, and at the same time develop a second profession. that of salesmanship, which will increase his value to his company, increase his earning capacity, and increase his contributions to society.

The salesmen who work for jobbers and distributors find similar opportunity and romance in their work—some of it requiring all of the technical training typical of the manufacturers' sales engineers, and some of it needing only good common sense plus a flair for and interest in merchandising—moving more and more goods at lower cost to the ultimate consumer.

The graduate electrical engineer working for a jobber may contact industrial or commercial accounts, selling those products which require a technical knowledge for their application and use —for example, electronic controls, special types of transmission apparatus, and lighting equipment. In fact, there is some overlapping in the duties of the sales engineers representing the jobber and the manufacturer.

Similarly, utilities usually employ graduate engineers to call on large stores and office buildings because the very nature of the work demands an understanding of the technical application of electricity and electrical products to a specific job or problem.

Jobbers or distributors who sell appliances and merchandise to retail stores, usually employ a different type of salesman for this work. They prefer men with formal training in business administration, advertising, and selling, or the equivalent in experience.

These are the men who must know how to approach mass markets, who can show their dealers how to approach these markets and above all how they can make money by selling their products at the retail level.

These men must be merchants at heart —they must know and understand buying trends and market surveys; they must know the territories in which their dealers are located and how they can sell the maximum amount of goods in the area that they serve; they must assist their accounts in preparing advertising, display and other sales promotional material; they must be able to train salesmen and lead them to higher levels of proficiency, in brief, they must know the retail business, understand the problems of the merchant, know their products, and know their competition.

Utilities, too, employ salesmen who work with retail accounts that sell electrical equipment for domestic use. These men must have the same abilities and background as the distributors' or jobbers' salesmen who contact these accounts. In addition to working with these accounts on all phases of their merchandising problems, they offer special co-operative aids which the utility makes available. These include special advertising campaigns, window and store displays, product demonstrations, and the like, which are designed to create broad public acceptance for rsidential electrical equipment. These men go a step beyond, they work with the retailer and his salesmen to actually close sales.

Here again, is a branch of sales work in the Electrical Industry that is ever challenging, ever changing, ever fascinating, always offering new and greater opportunities to the man with initiative, vision, and a willingness to work.

Electrical dealers, whether they be department stores, furniture stores, other retailers, or specialty appliance stores, usually carry a full line of major and small appliances and lamps for sale to the ultimate user.

The educational requirements for a salesman at this level are not as high as in the other fields of distribution. A high school graduate with experience in re-

tail sales or advertising is a likely candidate.

Department stores usually school the individual in the policies that govern the operation of the department and the specific procedure in writing sales checks, co-operation with the credit department, and the like. The manager of the department usually does a certain amount of sales training which is supplemented by the training schools of manufacturers, distributors, and industry organizations.

Smaller stores rely principally upon their manufacturers and distributors for product and sales training.

At the retail level, a good knowledge of people, family habits, modes of living, and the buying motives of women are essential. At this level the salesman hears the word "no" more frequently than in any of the others. For major purchases he must learn how to influence both husband and wife—carefully weigh the wants of each, and present his sales points in such a way to captivate both, and take no chances on antagonizing one or the other. Patience and perseverance are paramount; resourcefulness in finding reasons for call backs, in finding new buying motives, in satisfactorily answering objections, are important factors. Sincerity and honesty are "musts," because upon them depend repeat sales—and repeat sales eventually become the salesman's bread and butter with the new customer paying the plus commissions.

So far, we have been talking about the actual sales work as it is a part of the distribution system—one other important part, advertising, should be considered.

Advertising on a national or local basis has as its objective to create acceptance for the company and its products, and to move the ultimate consumer to action—to the action of buying.

It has long been known that advertising alone will not accomplish the job of selling merchandise—that the co-operation of intelligent sales personnel is necessary at the point where the transaction is to be completed.

As a potent factor in the distribution of goods and services, the advertising man is also a job maker for his industry.

He, too, serves the public and enjoys the same degree of self satisfaction that the salesman does when he sees that the broad acceptance and expanding use of the electrical products that his company makes is raising the standard of living and directly contributing to our national prosperity.

Opportunities and jobs in the Electrical Industry, as previously stated, defy enumeration. These opportunities and jobs will continue to increase in number and importance as the Industry continues to grow.

The Industry will grow, however, only as long as salesmen make it grow; only as long as they expand the use of electrical energy and electrical equipment.

There is a place in the distributive branch of the Industry for the technically trained and those with the minimum qualifications of a high school education; many men with less than this minimum will continue to be outstanding men in sales work.

By and large, distribution offers unusual opportunities to a large number of people with the greatest possible variance in educational qualifications.

For reward in direct ratio to energy expended and native ability, look to distribution in the Electrical Industry for the greatest of all opportunities—and remember always, that "Sales Make Jobs."

Electric Water Systems Sales Expected to Reach Peak Next Year

PRODUCTION of electric water systems is increasing daily, manufacturers are planning an extensive program of dealer helps, a huge program of power line expansion is about to start, and farmers have a spendable farm income of more than twenty-three billion dollars.

These are some of the factors cited by the Electric Water Systems Council, a joint activity of Edison Electric Institute and the electric water system manufacturers, as an indication that the long-range picture for water systems sales was never brighter. The output of electric farm pumps and water systems will accelerate rapidly from now on and will reach an all-time peak next year, according to the Council.

To aid dealers in making the most of their sales opportunities, manufacturers have been working diligently on a manual for dealers that will cover sales, service, and installation. This manual, when completed, will be the most comprehensive book ever issued on the entire subject of water systems and their application. Copies will be available to all dealers.

Dealers are being urged to prepare now to get their share of the huge volume of water system sales in the immediate future and thus to be in on the ground floor in selling the many profitable items of equipment which are made possible by a water system.

In the future as before the war, the electric water system will be the spark-plug for a host of sales such as bathrooms, kitchen sinks, septic tanks, pipe, valves, fittings, drinking cups for stock, poultry drinking fountains, and heating equipment for the farm home.

In addition to the rural market, the water system dealer will find a wide field for sales on the edge of cities. Many surveys have indicated that more people than ever before intend to build on acreage tracts beyond the water mains.

The industrial, institutional, and commercial field also will present many sales opportunities as building gets into high gear. This market will be especially attractive in various lines of business catering to the tourist trade such as hotels, tourist courts, filling stations, garages, and roadside stands.

Following are steps suggested by the Council which will be helpful to dealers in preparing for large postwar sales.

1. Set up a pump and water system department headed by a man thoroughly qualified to make estimates, to lay out farm water systems, and to supervise installation.

2. Prepare now for a good display of water systems. This may involve the remodeling of an existing store or the purchase of a new store or adjoining store or other space. Manufacturers will gladly assist dealers in designing attractive store fronts, show windows, and showroom and office.

3. Fit out a service truck or car so that water systems can be displayed and demonstrated where this is most effective, namely at the point of sale—right on the farmer's own property.

4. Set up a repair and maintenance department in connection with the shop and have an orderly arrangement of bins for the stocking of repair parts.

5. Tie in with the advertising and promotional activities of the manufacturer and distributor.

6. Work closely with the power companies in getting lists of prospects.

(*Continued on page* 301)

The Job Ahead for the T. & D. Committee

By L. R. Gaty

Chairman, Transmission and Distribution Committee, E.E.I.

Presented before the T. & D. Committee Meeting, Edison Electric Institute, Cleveland, Ohio, October 15, 1945

THERE was considerable doubt until the middle of August that we could go ahead with our plans for this meeting. Then, as you all know, the picture changed overnight. The sudden ending of World War II has put a serious responsibility on all industry to convert quickly. We, too, are confronted with many problems and must use our ingenuity to the fullest to meet and solve these problems successfully.

A period of unprecedented industrial expansion is visualized by many. During this period we in the power industry will be required to anticipate the changing picture and supply service when and where it is needed. In addition to this we have a tremendous volume of work that we were unable to do during the past four years but which must be done soon. All of this makes me confident that there is a period of at least four or five years ahead of us which will be mighty busy.

We have been restricted during the past few meetings in what we could do, the time necessary to prepare information and even the time to attend the meetings. Time is always valuable but the few days a year to participate in these meetings of the Transmission and Distribution Committee are well spent. You will get ideas that will repay you manyfold and will assist others by contributing your ideas to them. I urge all of you to take an active part in each session. This is your committee and your meeting. The Headquarters staff, the Sponsors and the Chairman can only help you have the kind of a meeting you want. Your sponsors work hard to put on an interesting and valuable program but they need your participation. If you agree or disagree with one of the other speakers get up and say so and let us hear your experience, or go to one of your sponsors and offer to present a paper at the next meeting. You are all on the firing line, won't you tell us about it?

Our plans for the coming year are to continue with the three annual meetings as heretofore, and I have hopes we can be back at the Edgewater Beach Hotel in May. The general setup and schedule will follow the old pattern. Your previous chairmen have done such a swell job that I would be rash indeed if I jumped in and made any drastic changes.

Your group sponsors are M. W. Ghen as Sponsor of the Underground Group. Mel has ambitious plans for this group and I am confident we can look forward to some "hot" underground sessions. Tom Brosnan is Sponsor of the General Engineering Group with plenty of ideas and lots of material. Tom is pitching right in and has a lot in store for us. Howard Stites is Sponsor of the Overhead Group with a full bill of fare to chew over. The Sponsor for the Standards and Specifications Group is Bob Habberley who has a full program cut out for himself. We are going to continue with the excellent arrangement started by your previous chairmen, wherein the business meetings of the S. & S. Groups will be held at a different time from the main committee. This will permit them a fuller discussion and will not require those with little interest to sit through a long S. & S. session. The Sponsor will present a report at each meeting and when required will request a vote on any standards or specifications which are ready.

There are many projects requiring attention and I would like to comment on just a few which are particularly important.

Emergency Service Restoration

Overall Service Reliability and Stormproofing

Job Training for Both Overhead and Underground

Service to Large Domestic Appliances

Radio Communication

Equipment Standardization

Economics in T. & D. Construction

The Loading of Feeders, Transformers and Distribution Equipment

Review of Wartime Practices—More Use of Machines

An assignment from the Engineering General Committee is to study and report on Emergency Service Restoration. We have a discussion scheduled for this meeting and would like to have your critical opinions and your help in formulating a practical but aggressive solution and program. A recent hurricane in Florida caused extensive damage to power facilities. More information is expected later regarding the extent of the damage and the duration of the outages involved. Another storm during the current year caused a large amount of damage in Texas with many lengthy outages. It is interesting to consider the weather during the past ten years. In this period many records have been broken which have stood since the inception of weather bureau statistics. There appears to be reasonable substantiation of a theory that there are long time weather cycles as well as short time weather cycles, and that we are now in a cycle of very severe and unusual weather. If this should be true it is all the more urgent that we anticipate storms of unusual severity and make reasonable preparations for repairing the damage.

Many of us pride ourselves on the quality of our service and its reliability. We have striven to improve it and have succeeded, to a degree. However, war conditions with the many limitations forced us to reduce both the quality and reliability. There are some who believe we had gone too far, that we should back off and give a "wartime" grade of service in the postwar period. I am in violent disagreement with this philosophy. We have only two things to sell, kilowatt hours and service. The measurement of kilowatt-hours is highly accurate but the measure of service is only in our customers' minds. In spite of what the record may show, our service

is as good or as poor as our customers think it is.

Many of us can say that our average customer is only out of service a few minutes per year. That is fine except for the customers that are on the wrong side of the average. There are 8760 hours in a year, so eight hours' outage per year would give us better than 99.9% perfect but certainly this is not good enough. What is needed is a measure of reliability that assures the customer of adequate service for his needs. There should be a method for determining the service reliability of the 25% of our customers who have the poorest service. This would be quite difficult to determine, but would be revealing in permitting us to devote our efforts to improving the service to this group. This would naturally improve our average performance, but would do far more than this in that greater attention would be given to those customers who have the most serious complaint with the service they are now receiving. There is little merit in devoting large expenditures to improving the service of customers who are now without service only five or ten minutes a year. It may be desirable to make a separate project of this type of review to try to determine the most serious weaknesses involving the poorest service group.

A problem intimately related to service reliability is the stormproofing of transmission and distribution lines. Considerable thought has been given to the stormproofing of transmission lines against lightning, wind and sleet. This has involved wider conductor spacing, greater insulation and modified configuration. The outage of a transmission line supplying a number of small substations is serious, and certainly every effort should be made to obtain the greatest possible reliability from this portion of our system. The problem on the distribution system is less difficult, but far more extensive. We have a number of tools to work with that are not available for improving service on the transmission system and we should develop these tools and then use them to the greatest extent practical. One of them that holds great promise for major improvements in stormproofing our distribution circuits is that of self-supporting armored aerial cable. This subject was felt to be so important that a separate subcommittee has been appointed to investigate the problem, analyze the possible use and cooperate with the cable manufacturers in the development of a rugged and economical cable.

The problem of job training is already with us. There are many ex-service men who will soon be asking for jobs as well as the former employees who are returning. Job training has been proven many times over during the war period and to a lesser extent in specific cases prior to the war. Some companies have a regular course for developing linemen, starting out with high school boys, which in a surprisingly short space of time resulting in satisfactory linemen. Courses were also developed for training cable splicers in a period which formerly would have been thought impossible. In fact, some men have said that they would prefer to start with a completely green man and train him to do things their way. Job training will improve our safety records and pay large time saving dividends, and consideration of it should be included in the work of this Committee.

Domestic appliances will soon be available from the manufacturers in large quantities. One of the problems facing us is the supply to appliances requiring large starting currents, such as unit air conditioning installations. A subcommittee has been studying this problem and discussing it with the manufacturers and will give us an interim report at this meeting. A similar problem is expected from the supply to small welders for use in home workshops and on the farm. There may be other appliances developed which will require heavy inrush currents, but will have a very low annual load factor. This problem will be particularly difficult in the low load density areas.

Radio communication has been reviewed before and considerable work done on it by special committees of the Institute. Equipment should be available in the near future and we expect permission can be obtained for its installation and use. This is another excellent tool to use in the improvement of service reliability. One of the great handicaps in restoring service after severe storms is that telephone communication is paralyzed. This lack of communication slows down the restoration process and decreases the efficiency of the available men. Many examples have been given showing that a mobile communication system can pay for itself many times over in one severe storm.

Standardization of material and equipment should be particularly beneficial in the period immediately ahead of us. General standardization will result in lower costs and improved deliveries. The longer this work is delayed the more difficult it is to get general approval for its adoption and the smaller the benefits become.

In spite of the requirements for improved service reliability, it is necessary to construct and operate on a basis of sound economics. More thought and study should be given to the economics of the distribution system. We are now in a period of rising costs so that in order to hold our own it will be necessary to institute economies. There is a question whether we have yet developed a real cost comparison between open wire aerial construction and self supporting cable construction. Under certain conditions it is entirely feasible to build a less expensive line by using self supporting cable and eliminating right-of-way difficulties, tree trimming costs and excessive pole heights.

A considerable amount of study has been given to the subject of thermal loading on feeders, cables, transformers and other distribution equipment. During the war period the prior study paid dividends many times over and permitted supplying additional loads without large scale reinforcements. The previous study should be reviewed and brought up to date, recognizing the wartime loading experience and the new and improved materials and equipment that are available.

A review should be made of the wartime practices followed in our own industry as well as in other industries. Many of these undoubtedly have considerable merit, and should be retained or expanded in peacetime applications. Many precedents were broken in the construction industry, in shipbuilding and in manufacturing, which resulted in a reduction in the time required to deliver the necessary war materials. Serious thought should be given to the greater use of machinery and mechanized equipment for both underground and overhead construction work.

These are only a few of the problems facing us and mentioned in a high spot way for your consideration. Your Group Sponsors are working on them and many others. Won't you add to this list some of the problems you have now or the ones you have solved? This is your meeting — make the Sponsors and the Chairmen work for you.

Operating Experience with an Expulsion Tube Equipped 33 Kv Wood Pole Line

By M. H. Pratt
Central New York Power Corporation

Presented at a meeting of the Transmission and Distribution Committee, EEI, Cleveland, O., Oct. 15-16, 1945

THE power supply line which is the subject of this paper went into service in the spring of 1942. It was built to supply a high grade iron ore and scintering plant project at a site approximately seven miles from the selected source of power. This site had been in use in years past but had gone out of operation as a result of other ore sources coming into the picture. The fortunes of war made it necessary to reopen this ore bed. It was essential that the service be of extremely high reliability. At the same time, for several reasons, one of which was the requirement for reasonable material economy, it was agreed that only a single circuit line could be built. The supply line voltage is 33 kv with solidly grounded neutral at the source end.

The Conditions Encountered

The route of the then proposed line lay in a section of the Adirondack Mountains. Having had several medium voltage wood pole lines in the same general area for some years, we knew that prevention of outage from lighting was our most serious problem. These existing lines were of old style conventional metal, bow arrow arm type construction with pin insulators and formerly without wood strain guy insulators. In years past some of these lines had had overhead ground wires but these had all been removed due to mechanical troubles. They were of no help anyway as the information on ground resistances in this area given below will show. These lines had been equipped with wood strain guy insulators in recent years.

Table I indicates the nature of the ground resistance problem with which we were faced. This was much more severe than in any of the areas where we had recently built new lines of medium voltage and it was in an area of about as severe lightning levels as any in our territory (30 thunderstorm days per year). This table shows the resistance of a single vertical rod to ground at thirteen progressive locations along the line route.

The Selection of the Design

It was desired to make the new line as lightning-proof as it was possible to do. All recent medium voltage lines constructed by the company had been of 10 foot wood arm, wood cross arm brace, and wood guy strain insulator construction with line post insulators, some with all three conductors on the one arm level, others of a little later period of ridge pin design. We had and have many miles of such lines and they all have an excellent lightning performance record although none were in this particular area. Many of the company operating men feel that such a design of line would have well served the purpose in the case under consideration. There may be merit in their opinion as events turned out, all factors considered. As to this you can form your own opinion when you have the full story before you.

Some previous tests made about two years earlier in this same area had shown resistances to earth of from 200 to 700 ohms per 100 feet of continuous buried counterpoise wire.

With spans of about 250 feet and 45 kv insulators with 3 feet of wood it was calculated that for an overhead ground wire to be effective in preventing flashover, the ground system should have a resistance of about 15 ohms. It was evident from the resistance measurements taken in this area, that a multiple parallel counterpoise system of at least four or five wires would have been necessary to assure suitable protection from an overhead ground wire. Any such installation was out of the question from a material and economic standpoint.

TABLE I — Resistance to Ground of a Single Vertical Rod

Location	*Resistance-Ohms*
1	1550
2	2700
3	2500
4	765
5	220
6	2350
7	480
8	1500
9	1650
10	1700
11	4775
12	3550
13	2750

As a result of the above situation, it appeared that expulsion protector tubes offered the only chance of keeping the line in operation under direct stroke lightning discharges. The maximum fault currents to be expected called for a tube with maximum rating of 3000 amperes. Such a tube has a minimum rating of 400 amperes on a reactance basis. Domination of circuit impedance by resistance will permit lower ratings. It was believed on the basis of some data, that possibly 180 amperes would be cleared by such a tube under dominant resistance characteristics such as ours. Unfortunately the currents to be expected on practically any phase to ground fault were far below even this figure with the footing resistances of any simple ground connection.

It was, therefore, decided to attempt the elimination of phase to ground low current fault tube operations by the insertion of an air gap in the tube ground wire down lead, set so as to force phase to phase tube operation before sparking to ground. It was figured that a 31 inch air gap in this lead would force phase to phase operation on a direct stroke with attendant high tube currents before going to ground over the gap in the common ground lead. It was also figured that the estimated impulse discharge voltage of the 34.5 kv tube in series with the 31 inch gap of 650 kv crest (1½ x 40 pos. wave) was sufficiently high to eliminate the majority of induced potentials from sparking to ground. Thus it was thought the line with this arrangement would be largely immune to induced stroke effects (supposed to be under 500 kv) and the tubes freed from the burden of clearing low current faults while the tubes would take care of any direct strokes on a phase to phase basis without line outage.

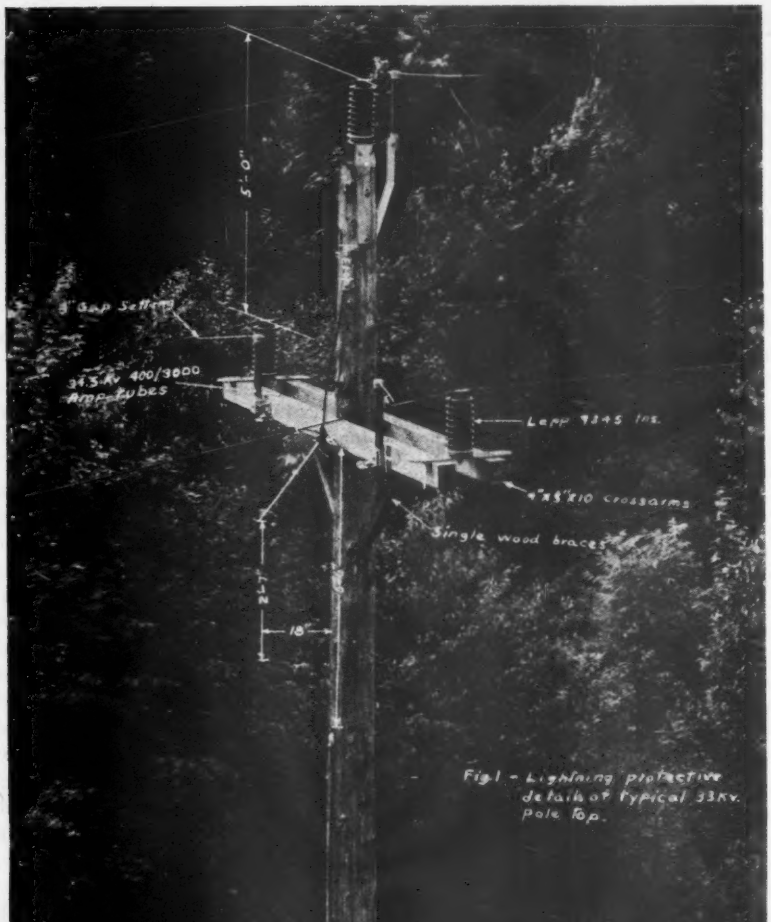


Fig. 1 Lightning Protector Details of Typical 33-kv Pole Top

So much for the theory then and the reasons why the line was built as it was and why we designate it as experimental.

Figure 1 shows the essential dimensions of a typical pole top with the protective features as discussed above incorporated. Each pole has a tube on each wire. The power conductors are 2/0 7 strand copper. Each wire is protected adjacent to the tube arcing horns to prevent pitting with a wrapping of dead soft copper #7 gauge 6 inches long. The spans average 250 feet, mostly on 35, 40 and 45 foot poles. Operation indicators were installed on each tube.

Operating Results

It remains to give and briefly discuss the operating results attained with this design. The operating record is given in Table II and covers three and a half years and four lightning seasons to date.

Discussing and enlarging on this record somewhat it becomes pertinent to draw atention to the two outages noted as due to other causes. Both of these occurred during the second winter of operation and caused very long interruptions for repairs under highly adverse winter weather conditions. The first caused a 12 hour outage and the second a 22 hour outage. In one case one tube and in the other two tubes were flashed over externally, burned, and showed irregular carbonized tracks in a number of places on the uncharred areas of the surface indicating reduction of the series gap over an extended period of time below the safe 2 inch minimum. The arcing horn tips were burnt as well as the conductors which burned down. After the second outage, which occurred shortly after the first, the line was taken out of service for two days and a climbing inspection made of every pole. The external gaps were originally set in a horizontal plane through the conductor, i.e., with horn tips aimed at the side of the conductors and were set at 2½ inches. About 18% of the gaps were found to be less than 2 inches, some substantially so. Several horns were found loose and many of the structure bolts could be and were tightened. The gaps were all reset to 3 inches with the horns below the conductors.

Looking at Table II it is surprising to note that while lightning performance was perfect, there were in the first year a large number of single tube operations indicating a far greater than expected number of induced stroke over voltages above the usually quoted 500 kv figure, in fact above 650 kv. Not only is this noteworthy but it is gratifying to note that the tubes cleared every one of these cases without trouble in spite of what must have been, in some cases at least, fault currents far below rating. It would appear that the minimum tube ratings are not critical.

Direct stroke operation apparently was exactly as expected as shown by the record.

Conclusions

Most certainly the tubes have prevented many lightning outages of this circuit which the overvoltage magnitudes indicated by the tube operations would have caused had the tubes not been used. How much damage would have been caused to the line and therefore how long these lightning outages would have been, it is of course impossible to say. As it was two long trouble outages did occur with another for inspection and adjustment which while not the fault in any way of the tube or line design, would not have occurred without tubes. We know now these trouble outages could have been prevented but only at the expense of a long, prear-

(*Continued on page* 307)

TABLE II—Operating Record

Year of Operation	1st	2nd	3rd	4th Lightning Season Only
Lightning Outages	0	0	0	0
Tube Operations	16	6	..	
Cases where more than one tube operated on a structure (top wire was always involved)	3	2	..	Not checked because of other work requirements
Cases where only one tube operated on a structure	10	1	..	
Total cases of line over-voltages cleared by tubes	13	3	..	
Outages due to other causes	0	2	0	0

Progress Report On Aerial Cable

By E. V. Sayles

Chairman, Subcommittee on Aerial Cable, Transmission and Distribution Committee, E.E.I.

Presented at a Meeting of the Transmission and Distribution Committee, E.E.I., Cleveland, October 15-16, 1945

THE principal objectives of the Subcommittee on Aerial Cable are:

1. To consider developments rapidly taking place in the design and application of aerial cable in its entirety, including the complete cable system with such accessories as are necessary for its satisfactory installation and operation.

2. To provide a means of analyzing and supplying committee members with facts regarding developments in progress; and

3. To sponsor an open forum for active discussion of the subject at the regular meetings of the T & D Committee.

In order to stimulate interest and discussion at the meeting an inquiry had been sent out asking a few basic questions regarding cable application at various voltages. Fifty-nine inquiries were distributed and thirty answers received. Of those answering, sixteen are using aerial cable. The inquiries developed several interesting points and will serve as an aid in future work of committee.

The inquiries were summarized as follows, but it should be borne in mind that the cable reported is but a small fraction of the total amount now in operation by the industry.

1. Some 600,000 feet of aerial cable now installed and in operation were reported by sixteen users. It is evident that most of the cable is three phase and that up to the present time only small amounts of single phase cable have been used by these reporting companies.

2. Cable operating at 2400 or 2400/4160 volts predominates. Of the sixteen companies reporting, eleven report cable operating at these voltages. A few large users reported cable operating at 7200 volts and 7200/12480, also 7620/13200 volts. Data for voltages above 2400/4160 is insufficient for making comparisons so that the only pertinent data is for cables operating at 2400 or 2400/4160 volts. Observations drawn from this voltage class are as follows:

a. *Supporting of Cables*—Of the eleven companies reporting cable in this voltage class, eight uses a messenger for supporting the cable and three use cables of the self-supporting type. For this discussion, self-supporting cables are interpreted to be cables whose means of support is inherent in the design of the cable sheath itself.

b. *Cable Shielding*—Answers to the inquiry did not permit clear interpretation of cable shielding on these voltages. Five companies report the use of shielded cables and six use unshielded cables. Of the five companies using shielded cable, four use metal shielding tapes and one depends upon conducting coatings.

c. *Kind of Insulation*—A majority of companies use rubber or rubber-like insulation of some type, six out of eleven so reporting. One uses both rubber and varnished cambric and four use paper-lead types of cable which are substantially the customary types of underground cable supported on an aerial messenger.

d. *Insulation Thickness*—Average insulation thickness for rubber seems to be about 10/64" with a maximum of 11/64 and a minimum of 6/64, the latter being particularly mentioned by the user as being experimental but having given good service. In this case, the insulation is poly-ethylene. The varnished cambric thickness used is 8/64".

e. *Cable Sectionalizing Facilities*—Cable sectionalizing facilities do not seem to be very generally used, three companies reporting the use of such facilities with only one company reporting facilities for sectionalizing under load.

f. *Connections to Cable*—Few special devices have been installed for making connections to the cable, only one company reporting such facilities for making connections when the cable is energized and one when the cable is not energized. It is apparent that most companies have given their attention to the installation of the cable itself with little concern over how to make connections to the cable or what to do with it at terminals.

g. *Emergency Overloads*—This item was intended to find out if there is any particular concern over the possibility of transferring other overhead circuits to an aerial cable circuit during emergencies and overloading the circuit substantially — perhaps carrying two or three times its normal load for a couple of hours until normal conditions could be re-established. Only three companies seem to be concerned over this possibility.

3. With two or three notable exceptions, it appears that aerial cable has been used principally as the easiest way of building through trees, clearing bridges and other obstructions, or where there has not been room for open primary wires. Many of the installations reported have been made purely on an experimental basis.

4. Of considerable importance are statements by most users that, regardless of the type of aerial cable they have used, it seems to have given excellent service, no failures having been reported in any of the inquiries returned.

5. With reference to future installations, most companies seem to be keenly interested, even enthusiastic, about the future use of aerial cable. Several have pointed out that aerial cable is a natural transition step between open wire line and underground cable and that, while it does not eliminate tree trimming, it certainly minimizes it.

6. Future aerial cable installations indicate the use of both messenger supported cable and also self-supporting cable. Of thirteen companies reporting installations planned for the next few years, eight favor a separate messenger against five for self-supporting cable.

7. With reference to the shielding of cables by companies planning future installations, there seems to be a noticeable preference for shielding even for the lower voltages. Of the eleven companies planning new installations for 2400/4160 volts, seven intend to use shielded cables.

There is a wide variety of opinion among users as to why and what is wanted in aerial cable, and among manufacturers as to most practical type of construction. Both manufacturers and users are showing an increased interest in terminals and accessories so that such devices should be available for whatever type of cable is used.

The industry seems to be at the threshhold of many new developments in aerial cable systems and the subcommittee solicits ideas regarding future work undertaken by the committee.

Recommended Practice of Home Lighting

Prepared by the Committee on Residence Lighting of the Illuminating Engineering Society

THE table below giving recommended illumination values for the home is reproduced from "Recommended Practice of Home Lighting" a 40 page booklet recently published by the Illuminating Engineering Society. As pointed out in the booklet, the Illuminating Engineering Society has been developing during the past 30 years a series of lighting practice recommendations, covering a wide range of industries and applications. The Recommended Practice of Home Lighting is the first such lighting recommendation for the home—covering what is probably the largest lighting application and the one common to the greatest number of people.

In home lighting, unlike other lighting applications, individual tastes and esthetic considerations are of great importance. Because of the emphasis on individual preference in design and effects, it is perhaps natural to overlook the fundamental requirement of the home's lighting—that of safe, easy, and comfortable seeing. This Recommended Practice has attempted to assemble authoritative information on the subject in a form which will enable architects, home owners and builders to design interior lighting systems which include provision for the seeing needs of the average family.

While much of the equipment illustrated in the Recommended Practice is not available at the moment of publication due to wartime restrictions, but the illustrations should be considered as examples of good practice. The release of materials and production facilities following the war will bring many changes in light sources and equipment types. Such changes will have some effect on lighting practice which will be treated in future revisions.

The Recommended Practice of Home Lighting is well illustrated and contains sections on The Objectives of Good Lighting, The Essentials of Good Lighting, and Lighting Recommendations for the Major Rooms of the Home. Copies are priced at 25 cents each from I.E.S., 51 Madison Avenue, New York.

Table I—Illumination Values For The Home

In the first section of the table entitled "Specific Visual Tasks," the illumination values given aim to fit the light to typical home tasks for persons with normal vision, with due consideration to such matters as cost and practical attainability. The values do *not* represent the optimum since under some conditions more light may be necessary, desirable, and often attainable. Such specific lighting may be obtained from portable lamps or from special purpose equipment designed for a specific function.

In the second section, illumination values are set forth for general lighting. These are intended to minimize undue brightness ratios between the illuminated visual tasks and their surroundings. In these places where close visual application is not involved, the values listed aim to assure certain and safe passage and lighting atmosphere for eye comfort and charm.

The values listed may be attained by fixtures, by portable lamps, or a combination of the two.

Specific Visual Tasks[1]	Footcandles Current Recommended Practice
Reading	
Prolonged periods (smaller type)	40
Casual periods (larger type)	20
Sewing	
On dark goods, fine needlework	100 or more
Average sewing (prolonged)	40
Average sewing (periodic)	20
Writing	20
Children's study table[2]	40
Game Tables	
Card table	10
Ping-pong	40
Kitchen	
Work counter, range and sink	40
Dressing Table Mirror[3]	20
Bathroom Mirror[3]	40
Laundry	
Ironer, ironing board or tubs	40
Workbench	40
General Lighting	
Entrance hall, stairways and stair landings	5
Living room, library, sunroom	5
Dining room[2]	10
Kitchen	5
Bedroom	5
Bathroom	

[1] The values listed for specific visual tasks are measured with a footcandle meter placed on the work surface with the light-sensitive cell on the same plane as the work. The values listed for General Lighting represent an average of a number of readings taken throughout the room on a plane 30 inches above the floor, with the light-sensitive cell held in a horizontal position.

[2] Where dining table is also used for home study by children or for other critical eye tasks, illumination specified for that task should be furnished.

[3] Lighting values to be delivered on both sides of face.

Annual Meeting of Pennsylvania Electric Association

UTILITY MEN were urged to get into politics by one speaker and scolded for not letting Congressmen know about their problems by another at the thirty-eighth Annual Meeting and Industrial Conference of the Pennsylvania Electric Association on September 26 and 27. The conference was held in Philadelphia. Francis McQuillin of the West Penn Power Company was elected the new president. The theme of the meeting was "The Fulfillment of Victory—Working and Living Electrically."

The advice for utility men to get into politics was offered by John Siggins, Jr., Chairman of the Pennsylvania Public Utility Commission, during an address in which he declared that he did not mean that utility men should run for office but that they should "fight for what is right."

"If you believe in certain principles," said Mr. Siggins, "don't be afraid to fight for them. You cannot ward off dangers by sitting back. You must stand firm on your feet for the convictions in which you believe."

Congressman Walter H. Judd, of Minnesota, addressed the membership on the subject of, "What Is Going On In Asia."

Delegates to the P.E.A. Meeting were welcomed by Horace P. Liversidge, President of the Philadelphia Electric Company, after which they were addressed by Purcell L. Smith, President of the National Association of Electric Companies, on the subject, "The Voice of the Electric Utility Industry." Smith took the Electric Utilities to task for having been negligent in properly advising members of Congress on subjects which have a distinct bearing on the industry, and urged them to be a great deal more outspoken in the future.

Other speakers who addressed the gathering include: Dr. Leo Wolman, Professor of Economics at Columbia University; Dr. Howard Berolzheimer, Economist of the National Tax Equality Association; Dr. Claude Robinson, President of Opinion Research Corporation; Frank W. Lovejoy, Sales Executive of Socony-Vacuum Oil Company and Pressley H. McCance, President of Duquesne Light & Power Company.

Dr. Wolman foresaw substantial general increases in wages ahead, and he declared that these wage increases would be quickly passed on to the consumer in the form of higher prices despite attempts to regulate prices from Washington. He told the assembled utility men that eventually the American economy would settle down to an era in which both wages and prices were on a much higher level.

Tax discrimination was the topic of Dr. Berolzheimer. He sketched the freedom from taxes under which the cooperatives operate, both on national and local levels.

Dr. Robinson of Princeton told his audience that reducing prices was not enough to make a company a friend in the eyes of the public; a company must go further and justify its position in its community. He declared that companies must give the public more information about themselves, particularly about profits. He stated that his surveys showed a trend toward the right in American thinking.

Mr. McCance in his address called on men of the electric light and power companies to be more venturesome in their contacts with employees and the public. He said that much in the way of information directed to power company workers and power consumers needed to be revised.

Sharing in the election honors with Mr. McQuillin were H. M. Parkinson and Charles E. Oakes, both of the Pennsylvania Power & Light Company. They will be vice presidents for the coming twelve months.

In his annual address the retiring president, George E. Whitwell, sketched the rural electrification program ahead in the state of Pennsylvania. Between 26,000 and 30,000 unserved farms of the Keystone State may be expected to have lights and power in the not-too-distant future, he said, and added that when the program is finished the rural areas will be more than 90 per cent electrified.

He pointed out the vital role of the electric utilities in providing more jobs following industrial reconversion and in keeping down the production costs. He also reviewed the war service of the electric companies.

In closing the meeting, Whitwell paid special honor to sections of the Association which had done outstanding work during the past year.

The Accounting Section, under the leadership of J. U. Diehl, was commended for the efficiency with which it turned out the many extra reports, required by the government during wartime.

The Engineering Section, headed by E. B. Shew of Philadelphia Electric Co., was acclaimed for keeping the increased demands of war industries supplied.

The Business Development Section, under the aegis of Austin Monty, Philadelphia Electric Co., was complimented for its assistance to users which enabled them to get the most out of their electric equipment.

The General Section, led by Harry Ferguson, Pennsylvania Power & Light Co., was praised for its fine job in building employee morale and establishing effective safety, employment, and personnel practices. Due, in part, to this Section's efforts, Pennsylvania's electric utilities frequency rate was 48 per cent lower, in the past 12 months, than that of the National Safety Council's Electric Safety Group.

Metropolitan Edison Co., with a frequency rate of 3.751 won the annual safety award in Group 1; Pennsylvania Water & Power Co., with a rate of 3.455 in Group 2, and South Penn Power Co., no accidents, in Group 3.

A Disney film on adequate wiring entitled "The Dawn of Better Living" was presented by Westinghouse Electric Corp., and one on television entitled "Sightseeing at Home" by General Electric Co.

Electric Water Systems

(*Continued from page* 294)

7. Keep in touch with the county agent and home demonstration agent who often have valuable tips on farmers who are prospects for new systems or additions to existing installations.

8. Display water systems at fairs and community shows.

During the war years, when the demand for food was at an all-time high, electric water systems demonstrated their value as an aid to the farmer in enabling him to produce more food at a saving in labor. This demonstration of the fact that a water system pays out in ice cold cash—that it is not a luxury but a valuable labor-saving device—will serve as a powerful sales stimulant in the years ahead, the Council points out.

Northwest Association Plans Postwar Load Building

HOW best to work together to build new loads as replacements for the war industrial loads now being cut back was the topic of the Northeast Electric Light and Power Association at its meeting in Seattle on Sept. 12. The meeting stressed coordinated planning by the five branches of the electrical industry—utilities, manufacturers, wholesalers, appliance dealers and electrical contractors—with the Northeast association providing a common meeting ground.

The meeting, the first of the association since V-J Day, brought together the executive committee of the association under the chairmanship of Pat Johnson, of the Puget Sound Power and Light Company, and the electrical development committee, under the chairmanship of D. B. Leonard of the Pacific Power & Light Company. The latter committee was set up to coordinate the programs of each of the association's four sections.

Each of the four sections—accounting, business development, engineering, and personnel—are planning two conferences during the year, a smaller fall conference of executives to detail a program and a larger conference in the spring to bring this program to completion. Many of the section sub-committees, of necessity dormant during the war period, will be reactivated and will focus attention on economic operation or building business.

Principal emphasis in both committees was on the business development section which has before it the important subjects of water heater standardization, electric house heating, and industrial development. New activities looking toward increased business in the farm, residential, commercial, and industrial fields will be set up. Most of the utilities in the area will not merchandise appliances, though a few will merchandise in those spots not adequately covered by established dealers. Carl Edstrom, E. N. E. Appliance Co., Portland, and dealer representative on the committee, assured the group that dealers were gearing up to do a job as soon as appliances are available in volume.

J. C. Platt, Edison Electric Appliance Co., and W. M. Jewell, Westinghouse Supply Co., both of Seattle, and representing the manufacturers and wholesalers, emphasized that utilities, whether they merchandise or not, should help promote new merchandise such as dishwashers, disposals, home freezing units, and automatic laundry. R. D. Horning, Seattle Electrical Contractors' Association, representing the contractors, stated that in many areas, utilities are finding it profitable to contract construction work.

Several committee members reported the formation of local appliance dealers' associations and local contractors' associations, and the committee expressed approval of the formation of such organizations as a vehicle through which promotion plans can be made more effective. Suggestion for an adequate wiring program for the association was proposed and favorably received.

Utility accountants are initiating studies looking toward economy of procedure. The engineers, not now pressed for additional capacity, will continue their studies of improved operating with particular attention to rural service, and in addition will undertake studies of load factor, demands, and diversity of house heating, a subject particularly live at this time in the Pacific Northwest. The personnel group sees necessity for rounding out a program in employe relations, and the establishing of policies respecting the employment of returning veterans.

Berkeley Snow, executive secretary, reported that the association's survey of electric company taxes in the five states, recently released, showed that these companies paid over $27 million in taxes in 1944. The association's promotion booklet on rural electrification is in the hands of the printer, and may be expected in late October, depending on the paper situation.

Indiana Association Meeting Meets at French Lick

WITH the pendulum swinging to commercial development, sales promotion and public relations are vital peace-time jobs for the utilities, H. M. Sawyer, vice president of American Gas & Electric Service Corp. told the Indiana Electric Association at its annual meeting held at French Lick, September 26-28. Rates are as much a part of our selling program as price is a part of retail merchandising, he asserted. The industry should re-examine its rates in the light of competition, review terms and conditions of rates, and simplify them so that the customer will find them fair and equitable. He urged further that industry salesmen be trained not only to sell electric service but to be ambassadors of good will.

E. D. Anderson, vice president, Northern Indiana Public Service Co., announced that a group of electric utilities in Indiana, acting individually, are working on a plan to contribute in excess of $40,000 to Purdue University for the development of a demonstration farm. Purpose of the farm would be to educate the farm people of Indiana in the use of electric service. "Full advantage of farm electrification will not be appreciated until the farmer can see for himself the economies that electric service makes possible," Mr. Anderson declared.

Dean Harry J. Reed, Agricultural Experiment Station, Purdue, expressed belief that a direct relation exists between standard of living and meter readings. The more the farmer can produce, through effective use of electric service, the more money he will have to spend for goods, Dean Reed explained. If electric service can help agriculture to produce more wealth and put more money in the hands of people it is contributing to a higher standard of living.

R. J. Kryter, Esterline-Angus Co., in a discussion of atomic energy predicted that the early peace-time applications of atomic energy would be in power plants as a source of heat within boilers. Such use would be governed by the laws of economics and would, at least in early phases, not affect station design materially.

Ashton B. Collins, originator of Reddy Kilowatt, advancing the thesis that public relations is the No. 1 utility problem of peace urged the industry to stop selling down to "penny cheapness" by over-emphasis on the cheapness of electric service. "It's not what the product costs but how the buyer feels about

what he's buying that counts", he said.

Officers of the Indiana Electric Association for the coming year are: president, Arnold Hogan, vice president Indiana & Michigan Electric Co.; vice president, D. C. Hess, vice president, Indianapolis Power & Light Co.; secretary-treasurer, E. F. Hauser. Q. G. Oglebay, vice president of Public Service Co. of Indiana, Inc. was elected director of the association to succeed L. B. Schiesz, outgoing president of the association.

William H. Taylor

WILLIAM H. TAYLOR, former president of the Philadelphia Electric Company, died on Oct. 9 at his home at 12 S. Suffolk Avenue, Ventnor, N. J., following a long illness. He was 65.

A native of Ashley, Pa., Mr. Taylor began his public utility career in 1903, several years after graduating as a mechanical engineer from the Stevens Institute of Technology, of Hoboken, N. J.

Practically his entire business and utility experience was spent with The United Gas Improvement Company properties and interests. He started as a construction engineer for U.G.I., supervising installation of gas and electric equipment in various U.G.I. plants throughout the country.

Subsequently Mr. Taylor served the Omaha Gas Company, of Omaha, Neb.; Fulton County Gas & Electric Company, of Gloversville, N. Y., Charleston, S. C.; Consolidated Railway and Lighting Company, Counties Gas and Electric Company, of Ardmore, Pa., and the Georgia Railway and Power Company, of Atlanta, in executive capacities.

In 1927 he was recalled to Philadelphia and became operating vice-president of the U.G.I. A year later, on Feb. 14, 1928, he was elected president and a director of the Philadelphia Electric Company. He retired in April, 1940.

New BL-BS Sound-Slide Film on Street Lighting

INTO the mails this month went the first shipments to utilities of the new sound-slide film prepared by the National Better Light-Better Sight Bureau to assist them in showing the community advantages of modernized and improved street lighting. Films have been distributed to fifty companies to date and the plans of many electric light and power companies throughout the nation for better illumination of streets, and others are preparing to purchase them. The film is timed to coincide with was created at the demand of commercial executives of power companies earlier this year. Following the demand for such a film a canvass was taken, a sampling of opinion throughout the country, and fully 90 per cent of the queries were answered in the affirmative.

Designed to aid in presentations to municipal authorities, civic groups and other organizations interested in community welfare, the film illustrates the fact that street lighting has not kept pace with the growth of most cities and towns.

The pictures and narrative, created to be entertaining as well as educational, touch on all such street lighting factors as driving hazards, safety of pedestrians on streets at night, real estate values, and night-time shopping. The title of the production is "Let There Be Light."

Announcement of the completion of the project was made by H. P. J. Steinmetz, chairman of the Better Light-Better Sight Bureau.

Winners of Annual Laura McCall Award

WINNERS of the 1944 Laura McCall Awards, sponsored by *McCall's Magazine,* and administered by the Edison Electric Institute, were announced this month. The awards are given annually in public recognition of the outstanding contributions of electric light and power companies, through their home service departments, to the health and happiness of the American home.

First prize was awarded to H. H. Brenan, manager of Residential Sales Department, Pennsylvania Power & Light Company, Allentown; second prize to Martha Marie Bohlsen, Home Service Director, Nebraska Power Company, Omaha; third prize to Edith T. Rauch, Home Service Director, Puget Sound Power & Light Company, Seattle; fourth prize to Routh T. Neill, Home Service Director, Kingsport Utilities, Inc., Kingsport, Tenn., and fifth prize to Kathryn M. Holy, Home Service Director, Florida Power Corp., St. Petersburg.

The Board of Judges for the Laura McCall Awards consisted of: C. E. Greenwood, Commercial Director, Edison Electric Institute; Dr. Helen Judy Bond, Professor of Home Economics, Teachers College, Columbia University; L. E. Moffatt, Editor of *Electrical Merchandising;* Miss Clara Zillessen, Advertising Manager, Philadelphia Electric Company, and Harry Restofski, Sales Manager, West Penn Power Company, Pittsburgh.

The prizes, an engraved plaque, four illuminated parchments and a total of $400 in War Bonds and Stamps, are awarded on the basis of reports of 2000 words or less, submitted by the entrants and covering: 1) The Home Service Department's activities to further electrical living through the use and care of electrical household equipment; 2) activities participating in the 1944 wartime program of food conservation and preservation; 3) a summary of achievements.

Accomplishments were considered with relation to the size of the department and the territory served, in order that all entrants might compete on an equal basis.

"Power for War"

ACTIVITIES of the electric light and power industry during America's war years are graphically sketched in "Power for War," a report just issued by the Council of Electric Operating Companies of Washington. The thirty-two-page booklet illustrated in colors is designed to be a permanent record of how the accomplishments of the power companies helped bring about unconditional surrender on two continents.

"So quiet and efficient was this performance that few appreciate its magnitude," writes Tom P. Walker, president of the Council, in his foreword to the presentation.

The booklet describes the role the power companies played in relation to the navy, the army, the merchant marine and war work in the factories. Power pooling and fuel conservation have their chapters. Tributes by Secretary of War Patterson and Chairman Krug of the War Production Board appear.

The report concludes with the statement:

"An era of abundance is at hand. Thus will jobs be made. Just as the electric light and power industry proved itself 'never too little, never too late,' when the call for war sounded, so will it respond in this new and better world."

PERSONALS

WALTER C. BECKJORD, President of Columbia Engineering Corporation and Vice President and Director of Columbia Gas & Electric Corp has been elected President of Cincinnati Gas & Electric Company by the Ohio utility's Board of Directors. He succeeds H. C. BLACKWELL who asked the board to accept his request for retirement in accordance with provisions of the company's retirement plan adopted several years ago.

Mr. Blackwell remains actively with the Company. He was elected Chairman of the Board following the acceptance of his resignation as president.

Mr. Beckjord, has been identified with the utilities industry since 1909. He was born in St. Paul, Minnesota and was graduated from the University of Minnesota as an electrical engineer. Upon his graduation he went with the St. Paul Gas Light Company, a subsidiary of the American Light & Traction Company of which Mr. Beckjord later became vice president and general manager. In 1930, he became vice president and general manager of the Boston Consolidated Gas Co., Boston, Mass., leaving there in 1934 to join the Columbia Gas & Electric Corp as vice president and general manager. Mr. Beckjord has taken an active part in the work of the national associations representing gas and electric industries and served as president of the American Gas Association in 1940.

Mr. Blackwell went to Cincinnati from Kansas City, Missouri, in 1924, as vice president and general manager of the local companies. He entered the public utility field as engineer with the People's Light Co. of Davenport, Iowa, in 1906. He became vice president and General Manager of the Kansas City Power & Light Co. Mr. Blackwell has been active within the associations representing the public utility industry and has served as president of the Association of Edison Illuminating Companies since 1941.

FREDERICK M. IVES, since 1919 general counsel for the Boston Edison Co., has been elected a vice president. Mr. Ives is a graduate of Harvard College and Harvard Law School, and for many years prior to 1919 represented the Boston Company in legal matters. He is senior member of the firm of Johnson, Clapp, Ives & Knight, Boston.

JOHN A. HERLIHY, assistant to the general manager since 1944, has been made a vice president of the Boston company. A native of Lynn, Mass., Mr. Herlihy was graduated from the Massachusetts Institute of Technology in 1911, and joined the Edison company in 1913 as an engineering inspector in the supply department. He served 17 months overseas in World War I, and on returning from France with the rank of captain in 1919 was named assistant superintendent of the supply department. He became superintendent in 1935 and assistant vice president in 1942.

FRANCIS MCQUILLIN, recently elected president of the Pennsylvania Electric Association, is the industrial sales manager of the West Penn Power Co., Pittsburgh.

Mr. McQuillin was born in England and received his early education in that country. After coming to the United States, he held positions with the Interboro Rapid Transit Co. and New York Edison Co., both of New York, and the Consolidated Light, Power & Heat Co. of Huntington, W. Va.

He became identified with the West Penn interests in 1918 in their West Virginia territory. In 1923 he joined the West Penn Power Co. of Pittsburgh as power engineer, and in 1929, was appointed to his present position.

Mr. McQuillin has served as a director of the Engineering Society of Western Pennsylvania; he has been active in the Sales Executives Club of Pittsburgh, of which he is a past-president and he was also chairman of the power and heating committee of the Edison Electric Institute. For the past year, he has served as vice president of the Pennsylvania Electric Association.

M. R. RODGER, supervisor of load building activity for the Middle West Service Co., Chicago, since 1938, has joined the Bendix Home Appliance Co., South Bend, Ind. For many years Mr. Rodger has been identified with the utility industry. Prior to his connection with Middle West Service, he spent seventeen years with the Central Illinois Public Service Co., of Springfield, Ill., the last fifteen of which were in a supervisory capacity in merchandise selling and lighting activities. Mr. Rodger is a former chairman of the Sales Training Committee of the Institute.

A. L. POLLARD, for the past 15 years connected with the Puget Sound Power & Light Co., Seattle, has been appointed general superintendent of operations. In the course of his association with the Seattle utility, Mr. Pollard has held many responsible positions in the operating department. His new duties are supervision and coordination of activities of the division of power supply and the six operating divisions of the company in connection with construction, operation and maintenance. Mr. Pollard is a member of AIEE.

At the same time R. W. JOYCE was appointed general commercial manager of the company, and A. S. J. STEELE, formerly suburban manager of the central division, was promoted to succeed Mr. Joyce as northeastern division manager.

Mr. Joyce whose new assignment makes him responsible for carrying out policies relating to rates, contracts and rural electrifications, has been with Puget Power since 1928. He has held managerial positions in the central, western and southern divisions.

Mr. Steele, a graduate in electrical engineering from the University of Texas, joined the utility staff in 1930 as manager of the western district and since 1934 has been suburban manager of the central division. He has been associated with a number of electric utilities during the past 25 years.

CARL F. FELKER has been named manager of the Newburgh district for the Southern Indiana Gas & Electric Co., to succeed Herman Schumacher, retired. Mr. Felker joined the Indiana utility company in 1924.

CHARLES F. KELLS, formerly on the industrial engineering staff of West Penn Power Company, has taken over the management of the new postwar educational program of the Electric Industrial Truck Association, which includes leading manufacturers of battery trucks, batteries and charging equipment.

J. A. FULLER has been appointed assistant to the president of the Shawini-

gan Water & Power Company effective immediately. Mr. Fuller has also been appointed vice-president of Shawinigan Chemicals Limited of which company he is at present secretary-treasurer and director.

PERCY W. WRIGHT, Chief Cost Accountant of the Shawinigan Water & Power Company, has been appointed secretary-treasurer of Shawinigan Chemicals Limited, replacing Mr. Fuller in this position.

A. C. JONCAS succeeds Mr. Wright as Chief Cost Accountant of the Shawinigan Water & Power Company.

ROBERT H. FITE, who has been head of the Washington (D. C.) office of Ebasco Services, Inc., since 1941, has been named vice-president and a director of the Florida Power & Light Co., Miami. In assuming his new executive duties, Mr. Fite is returning to the company he served for many years. His first association with the Miami utility was in 1926 as an engineer. He transferred almost immediately thereafter to the rate department and later became head of that department. In 1932 he was appointed general sales manager. He left Florida Power & Light Company in 1936 to enter the sales department of Ebasco Services, Inc., in New York, and three years later he became head of Ebasco's sales department. He then went to Washington.

A graduate of Vanderbilt University, Mr. Fite joined General Electric Co. at Schenectady, where he spent one year, the following year going to Nashville for G. E.

Changes in the Detroit office staff of the Detroit Edison Co. sales department have been announced by Angus D. McLay, vice president and sales manager.

CHARLES C. MUNROE, formerly superintendent of lighting sales, has been transferred to the staff of the sales manager, specializing in research and studies of the new forms of lighting sources and their application.

LEE E. TAYLER, formerly assistant to the superintendent of lighting sales, has become senior engineer of lighting sales. PAUL L. PENFIELD, assistant to the sales manager, will be responsible for the company's advertising and for the company magazine "Synchroscope."

THOMAS F. GESSNER, formerly advertising manager, has resigned to join the public relations staff of the Evans Products Co.

HAROLD J. HALL, formerly staff engineer, has been appointed district commercial manager at Birmingham, which includes the southern section of Oakland County, succeeding RALPH W. BRICKER, transferred to the Monroe office. The retirement, after 34 years of service, of WILLIAM J. FITZGERALD, for 26 years district commercial manager at Monroe, was also announced.

WILLIAM C. FREEMAN has been elected president of the Middle West Corp., succeeding Purcell L. Smith, who recently resigned to become president of the National Association of Electric Companies. Mr. Freeman was also elected a member of the company's board of directors.

Prior to his association with Middle West, Mr. Freeman was a commercial banker, having been vice-president of National Bank of Republic and executive vice-president of National Republic Co., investment affiliate of the bank for a number of years.

Mr. Freeman was born in Freemansburgh, Pa., March 9, 1887, and entered the banking business in Chicago at the age of 15 with the National Bank of which he subsequently became vice-president.

In addition to his connection with Middle West Corp., Mr. Freeman is a director of American Service Co., Kansas City, Mo.; Ashland Oil & Refining Co., Ashland, Ky.; Indiana Gas & Water Co., Inc., Indianapolis; Mid-Continent Laundries, Inc., Chicago; Public Service Co. of Indiana, Inc., Indianapolis and Yates-American Machine Co., Beloit, Wisconsin.

Announcement has been made by the Northern States Power Co. of the appointment of S. H. CONKEY as general sales manager and of LT. COL. CARL T. BREMICKER as assistant general sales manager. ROBERT E. STEELE has been named manager of the lighting sales department and BYRON W. HANSON sales manager of the Fargo division of the company.

Mr. Conkey was formerly assistant general sales manager and Colonel Bremicker succeeds to the assistant general sales manager's position as a result of Mr. Conkey's promotion.

Formerly manager of the company's lighting sales department, Colonel Bremicker has recently returned from overseas duty with the Army Air Corps. New manager of the lighting sales department, Mr. Steele has been with the company as industrial lighting engineer for 21 years and long has been an active figure in Northwest industrial and civic affairs.

Mr. Hanson was formerly a member of the company's dealer promotion department and for the past three years has been with the War Production Board.

P. T. LAGRONE, division manager for the Mississippi Power & Light Co., at Greenville, Miss., since 1939, and an official of the company since 1926, has resigned to enter the electrical appliance business at Greenville. C. M. BROUGH has been appointed by the utility company to succeed Mr. Lagrone.

JOHN JOHNS, sales department, Oklahoma Gas & Electric Co., has been named rural consultant of the company, succeeding ROY E. HAYMAN, resigned. Mr. Johns joined the Oklahoma Gas organization in 1937 as a rural solicitor in what was then the commercial department. In 1941 he was transferred to Oklahoma City as rural representative in the sales department.

SAMUEL FRAZER of Detroit Edison retires this month after 34 years with that company. Mr. Frazer has been assistant to superintendent of the company's electrical system.

Born in Scotland, Mr. Frazer came to this country in 1909 and in 1911 started work with the Detroit Edison Company as an operator. In 1930 he was appointed superintendent of substations and in 1941 assistant to superintendent of the electrical system.

Mr. Frazer is succeeded by F. C. POHL, one of the many men he helped train in this department of the company's operations.

F. C. Pohl who takes over Mr. Frazer's duties came to the company in 1921. Since 1924 he has been employed in the electrical system, where in addition to his duties as assistant to superintendent of electrical system, Mr. Pohl now also assumes responsibility for personnel relations. C. F. RIES has been appointed superintendent of substations. C. C. PARKER has been appointed assistant superintendent in charge of operation, and J. W. BLEAKLEY assistant in charge of maintenance.

L. W. CLARK, formerly of Planning Division, has been appointed assistant

(*Continued on page* 307)

E.E.I. PUBLICATIONS AND SERVICE MATERIAL

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Proceedings—National Accounting Conferences		
Complete Set—8th Conference 1944	2.00	2.00
" " 7th " 1943	2.00	2.00
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M-2—Electric Light and Power Industry, 1944 (1945)	.30	.75 .85
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I-2—Electric Light and Power Industry in 1940 (5/41)	.30	.75
(Statistical Bulletins also available for years 1932 to 1939 inclusive) each	.30	.75
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PERSONALS

(*Continued from page* 305)

superintendent of Underground Lines Department. Mr. Clark's former duties in System Engineering will be taken up by R. C. ROUSE who becomes Utilization Equipment and Primary Supply engineer.

The Industrial and Retail Service Division and the Market Studies and Applications Division of the Industrial and Retail Department of Philadelphia Electric Company have been merged into the Market Studies and Service Division.

MAXWELL COLE was appointed manager of the new division and CHARLES T. RUSSELL, assistant manager.

Maxwell Cole, a native of Washington, D. C., was graduated from the United States Naval Academy in the class of 1916. He served in the Navy from 1916 until 1923, when he was retired from active service with the rank of lieutenant (senior grade).

Mr. Cole was employed by Philadelphia Electric Company in 1924 as an industrial serviceman. Through a series of promotions he became manager of the Industrial Service Division.

He was recalled to active duty in the Navy in July of 1941, and served throughout World War II. His rank was Commander. He returned to P. E. Company in September to assume his new duties.

Charles E. Russell, assistant manager of the newly organized Market Studies and Service Division, is a native Philadelphian. He is a graduate of Lehigh University and joined the P. E. Company in 1922 as an assistant power salesman. He later served as industrial heating engineer, supervisor of promotional analysis, director of industrial promotion, and manager of Market Studies and Applications Division.

Operating Experience

(*Continued from page* 298)

ranged outage for inspection, tightening and adjustment.

It becomes quite evident from the above that the shrinkage, curing and settling of new wood pole lines is liable to cause serious trouble with the critical external gap settings of line insulation protector tubes unless steps are taken to go over the line and tighten things up before trouble occurs. Depending upon circumstances, this may or may not be a serious drawback to the use of such equipment. It certainly is not a desirable situation. Where alternate methods of protection, such as ground wires and counterpoises, are feasible and economical or where high impulse designs alone are satisfactory, it would appear that they are to be preferred.

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Better Light—Better Sight—Better Production	$1.50 per 100	
Better Light—Better Sight—Better Living	$3.00 per 100	
Better Light—Better Sight—Better Sales	$1.50 per 100	
Priceless Eyes	4.50 per 100	
Lighting Films		
"Time to Relight"—(Commercial) sound slide 15 minutes, 85 pictures	$10.00 film & disc	
"Light Up—Step Up"—(Industrial) sound slide 15 minutes, 75 pictures	$10.00 " " "	
"You Can Do Something About It"—(Home) sound slide, 15 minutes, 95 pictures	$10.00 " " "	
Wiring		
Rewiring for Commercial and Industrial Buildings	$0.25	$0.25
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Basic Factors of Adequate Wiring—1939	.25	.25
Covered Neutral Cable Helps Sell Adequate Home Wiring—1939	.25	.25
Commercial Building Re-wiring Market—1939	.35	.35
	(Price on above three books as a group is 60c per set)	
Films		
Commercial Re-Wiring — lantern slides	Set $17.50	
Home Wiring—lantern slides	Set 25.00	

Miscellaneous, Reference Books, etc.

	Members	Non-Members
Code for Electricity Meters (1941)	$1.60	$2.00
Good Radio Reception (1937)	100 copies	4.00
	1000 "	25.00
	3000 "	60.00
	5000 "	95.00
Objective Type Rates, 1933-1936	.80	2.00
Ice and Wind Loading Tables for Overhead Line Conductors (Revision of Tables 85 to 96 of the Overhead System Reference Book) 1942	1-4 copies	10c.
	5-49 "	6c.
Power Sales Manual, plus Sec. 12-13-14 of 1944 (1941)	4.75	7.00
Rate Book for 1943	10.00	25.00
Rewiring for Commercial and Industrial Buildings (1941)	.25	.25
Sales Training Manual—Commercial Electric Cooking (1941)	1.50	1.50
Storm Loading and Strength of Wood Pole Lines and a Study of Wind Gusts (1936)	2.00	5.00
Weekly, Monthly and Annual Statistics (Includes Annual Statistical Bulletin; Weekly Electric Power Output; Monthly Electrical Research Statistics)	2.00	2.00

Periodicals

Better Light—Better Sight News (9 issues yearly)	$0.75	$0.75
Edison Electric Institute Bulletin (Monthly)	2.00	2.00
Rural Electrification Bulletin (5 issues yearly)		1.00

The Path Ahead

(*Continued from page 288*)

line have been built, thus reaching large numbers of other farms which have not yet taken the service. It is conservatively estimated that there are 900,000 farms reached by existing lines but not taking service at the present time. This brings the total of farms reached by distribution lines to 4,000,000; and if we subtract this 4,000,000 farms from 5,200,000 that are deemed to be candidates for service from distribution lines, there are left 1,200,000 farms to which distribution lines can reasonably be extended in the coming years.

Electric utility companies, according to a recent questionnaire sent out by the Institute, plan to connect 600,000 additional farms in the three years following 1945. The REA has announced that it expects in three years to add 1,300,000 rural customers, of which 75 per cent, or in excess of 900,000, will be farms. It is apparent that if these programs are fulfilled, not only will distribution lines be carried to all the farms that are practically within reach, but it will be necessary to find ways and means of getting a much larger percentage of farms along existing lines to take the service. To indicate how difficult it is to attain a saturation higher than 60 per cent, it should be observed that even in incorporated communities of 1000 population and less, most of which have had electric service for from 10 to 30 years, in 1940 only 84.5 per cent of all the occupied dwellings were wired for electricity, leaving 15.5 per cent still unserved.

The 1944 Census indicated that the number of unserved rural non-farm dwellings had been reduced to 920,000 and 200,000 of these were in communities where electricity was undoubtedly available.

As for these remaining rural dwellings, when the job of farm electrification is carried to practical completion, the job of rural electrification will also reach practical completion, because the distribution lines that are built to reach the remaining farms of this nation will reach practically all of the rural dwellings, and these rural dwellings can be given service at an added cost of about $112 per customer, a figure that does not importantly increase the total cost of the program.

It is unfortunate that so much controversy has grown up between the utility companies and the REA, since, so far as the intent is stated in the original REA Act, its purpose is to take electric service to rural customers not otherwise able to get such service. This objective, which we initiated 45 years ago and which we have followed particularly during the last 22 years, is the same as our own. There should therefore be cooperation between the two bodies, as I understand you have worked out fully for some years past in the State of Indiana.

Insofar as the specific matter of getting electricity to the farm is concerned, no electric utility can afford to feel abused if it has, by not covering its own contiguous farm territory, allowed or necessitated the establishment of REA cooperatives to cover the territory. I believe some companies have in the past held back on farm electrification from a failure to appreciate beforehand the long-term future possibilities of the business; but if, as a result, they find themselves ringed in with REA lines, they cannot fairly blame the REA for the consequences.

What the electric companies can and do justifiably object to is the use of REA appropriations for the construction of unneeded generating plants, the construction of long, duplicating transmission lines and the acquisition of non-rural business wherein it competes on an unfairly subsidized basis with existing taxpaying enterprises. It is very much to be hoped that the REA will discontinue these policies, which are economically wasteful of both money and effort, and as and when the bringing of electricity to the farms is completed, devote their energies, as we must do also, to the much longer task ahead of building up the use of electricity on the farm so as to help the farmer's earning power. This is an educational job, calling for all our initiative and persistence, which should be profitable alike for purveyor and user of the electric service.

CONVENTIONS AND MEETINGS

OCTOBER

1-2	Prime Movers Committee, EEI, Statler Hotel, Buffalo, N. Y.
15-16	Transmission and Distribution Committee, EEI, Cleveland Hotel, Cleveland, Ohio.
17-18	Electrical Equipment Committee, EEI, Cleveland Hotel, Cleveland, Ohio.
24-25	Missouri Valley Electric Association, Accounting Group, Continental Hotel, Kansas City, Mo.
25-26	Accident Prevention Committee, EEI, Lord Baltimore Hotel, Baltimore, Md.
26-27	Southeastern Electric Exchange, Accounting Group, Hotel Henry Grady, Atlanta, Ga.
25-27	Rocky Mountain Electrical League, Shirley-Savoy Hotel, Denver, Colo.

NOVEMBER

1-2	American Transit Association, Stevens Hotel, Chicago, Ill.
8	Oklahoma Utilities Association, Electric Light and Power Division, Mayo Hotel, Tulsa, Okla.
8-9	Pennsylvania Electric Association, Systems Operation Committee, Penn Harris Hotel, Harrisburg, Pa.
16-17	New Jersey Utilities Association, Seaview Country Club, Absecon, N. J.
26-27	Prime Movers Committee, EEI Headquarters, New York, N. Y.
27-28	Commercial Division General Committee, EEI, Biltmore Hotel, New York, N. Y.

DECEMBER

4-7	National Association of Railroad and Utilities Commissioners, Macfadden-Deauville Hotel, Miami Beach, Fla.
5-7	Southeastern Electric Exchange, Commercial Section, Atlanta Biltmore Hotel, Atlanta, Ga.

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